Rushern L. Baker, III
County Executive

National Pollutant Discharge Elimination System






ANNUAL REPORT 2013

Prince George's County
DEPARTMENT OF THE ENVIRONMENT
Adam Ortiz | Director

National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer Systems
2013 Annual Report

Prepared for

Maryland Department of the Environment
Water Management Administration
1800 Washington Boulevard
Baltimore, Maryland 21230

Prepared by

Prince George's County Government
Department of the Environment
Stormwater Management Division
1801 McCormick Drive, Fifth Floor
Largo, Maryland 20772

ACKNOWLEDGEMENTS

The Prince George's County Department of the Environment, Stormwater Management Division, prepares the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Annual Report on behalf of Prince George's County. The status of the County's NPDES programs is based upon information solicited from County agencies that administer jurisdiction-wide water quality programs and accomplishments achieved in partnership with State and Federal agencies and non-profit organizations. Primary administrative and technical personnel responsible for compliance with the NPDES MS4 Permit are referenced under Permit Administration, beginning on page A-1 of this report. The following groups also provide the County with programmatic assistance, information and/or ancillary funding to assist the County's efforts in protecting and improving water resources:

Maryland-National Capital Park and Planning Commission:
- Department of Parks and Recreation, Department of Planning

Maryland Department of Natural Resources

Maryland Department of the Environment

Neighborhood Design Center

Prince George's County Agencies
- Environment:
  - Directors Office: Communications and Community Engagement Section
  - Administrative Services Division: Budget and Procurement Section
  - Stormwater Management Division: Capital Projects Construction Section, Capital Projects Design Section, Environmental Programs Section, Inspection and Compliance Section
  - Waste Management Division: Disposal Section, Recycling Section, Project Management Section, Collections Section
  - Sustainability Initiatives Division: Community Outreach Promoting Empowerment Section
- Fire/Emergency Medical Services: Hazardous Materials Division
- Health Department: Environmental Engineering Program
- Office of Information Technology and Communications
- Public Works and Transportation:
  - Office of Engineering & Project Management: Engineering Division
  - Office of Highway Maintenance: Storm Drainage Maintenance Division, Special Services Division
  - Office of Transportation: Transit Planning Section
  - Office of Project Management: Plans and Programs, Bridge Inspection & Management
- Permitting, Inspections and Enforcement: Site/Road Review Division, Inspections Division, Enforcement Division, Building Plan Review

Prince George's County Beautification Committee

Prince George's County Public Schools

United States Environmental Protection Agency, Region III

United States Army Corps of Engineers

Washington Metropolitan Council of Governments

Washington Suburban Sanitary Commission

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ABBREVIATIONS

95-CLEAN	Prince George's County Water Pollution Line
ASD	Administrative Services Division
BBW	Black Branch watershed
B-IBI	Benthic-Index of Biotic Integrity
BMP	best management practices
BSR	Brown Station Road Sanitary Landfill
CAP	Compliance Action Plan
CBT	Chesapeake Bay Trust
CCCP	Comprehensive Community Cleanup Program
COMAR	Code of Maryland Regulations
COPE	Community Outreach Promoting Empowerment
CORP	County Office Recycling Program, (DoE)
CPCS	Capital Projects Construction Section, (DoE)
CPDS	Capital Projects Design Section, (DoE)
CFR	Code of Federal Regulations
Cu	total copper
DoE	Prince George's County Department of the Environment
DO	Director's Office
DPIE	Department of Permitting, Inspection and Enforcement
DPW&T	Prince George's County Department of Public Works and Transportation
DVD	Digital Versatile Disc
E. coli	*Escherichia coli*
EED	Environmental Engineering Division (Health Department)
EMC	event mean concentration
EMS	Emergency Medical Services
EPA	U.S. Environmental Protection Agency
ESD	Environmental Site Design
ESS	Engineering Services Section (DoE)
FD	Fire Department
FEMA	Federal Emergency Management Agency
F-IBI	Fish-Index of Biotic Integrity
FOG	Fats, Oil and Grease
GIS	Geographic Information System
HAZMAT	Prince George's County Hazardous Materials Team
HD	Prince George's County Health Department
HMD	Prince George's County Fire/Emergency Medical Services Department, Hazardous Materials Division
ID	Inspections Division (DPIE)
IDDE	Illicit Discharge Detection and Elimination
IPM	Integrated Pest Management
LED	Light-Emitting Diode
LID	Low Impact Development
MDE	Maryland Department of the Environment
MD DNR	Maryland Department of Natural Resources

MEP	maximum extent practicable
MES	Maryland Environmental Service
M-NCPPC	Maryland-National Capital Park and Planning Commission
MOU	Memorandum of Understanding
MRF	Materials Recycling Facility
MS4	Municipal Separate Storm Sewer System
MWCOG	Metropolitan Washington Council of Governments
NDC	Neighborhood Design Center
$NO_{3+}NO_2$	total nitrate+nitrite
NPDES	National Pollutant Discharge Elimination System
OCS	Prince George's County Office of Central Services
OEPM	Office of Engineering and Project Management (DPW&T)
OHMD	Office of Highway Maintenance Division, (DPW&T)
OPM	Office of Project Management, (DPW&T)
P2	pollution prevention
P3	Public Private Partnership
PAG	Proposal Analysis Group
Pb	total lead
PGCPS	Prince George's County Public Schools
PGSCD	Prince George's Soil Conservation District
PSS	Program Support Section (DoE)
QA/QC	quality assurance/quality control
R&DS	Research & Development Section (DoE)
RS	Recycling Section (DoE)
RTPID	Real-Time Passenger Information Display
SDI	Storm Drain Inventory
SDMD	Storm Drain Maintenance Division, (DPW&T)
SID	Sustainability Initiatives Division (DoE)
SMD	Stormwater Management Division (DoE)
SOP	standard operating procedures
SRRD	Site/Road Review Division (DPIE)
SWM	stormwater management
SWMF	stormwater management facility
SWPPP	Stormwater Pollution Prevention Plan
TKN	total Kjeldahl nitrogen
TMDL	Total Maximum Daily Load
TP	total phosphorus
TSS	total suspended solids
UM	University of Maryland
UMES	University of Maryland Extension Service
US ACE	United States Army Corp of Engineers
VOC	Volatile Organic Compounds
WMD	Waste Management Division, (DoE)
WSSC	Washington Suburban Sanitary Commission
Zn	total zinc

PART I: IDENTIFICATION

Prince George's County's NPDES MS4 Discharge Permit 99-DP-3314 MD0068284 covers stormwater discharges from the municipal separate storm sewer system in Prince George's County, Maryland, except for the City of Bowie. Discharges from the storm drain systems controlled by Prince George's County that may be subject to future NPDES MS4 stormwater program requirements may be added to this Permit at the discretion of the Maryland Department of the Environment (MDE). This permit was issued on October 13, 2004 and will remain in effect through October 13, 2009.

PART II: DEFINITIONS

As required by MDE, terms used in this permit are defined in relevant chapters of the Code of Federal Regulations (CFR) or the Code of Maryland Regulations (COMAR). Terms not defined in CFR or COMAR shall have the meanings attributed by common use unless the context in which they are used clearly requires a different meaning.

PART III: STANDARD PERMIT CONDITIONS

A. PERMIT ADMINISTRATION

Table A1 identifies lead program management and technical personnel for the 2013 reporting year, November 1, 2012 through December 31, 2013.

TABLE A1
KEY PRINCE GEORGE'S COUNTY STAFF

Permit Condition	Responsible Party		
	Department/ Division	**Manager, Title/ E-mail Address, Telephone**	**Technical Personnel, Title/ E-mail Address, Telephone**
Permit Administration	DoE/SMD	Jeff DeHan, Associate Director Stormwater Management Division jmdehan@co.pg.md.us 301-883-5838	N/A
Legal Authority	Office of Law	County Attorney 301-952-5225	N/A
Source Identification	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Technical staff listed below
Storm Drain System	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Tony Newsome, Engineer Environmental Programs Section acnewsome@co.pg.md.us 301-883-7647
Urban Best Management Practices (BMP)	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Catherine Escarpeta, GIS Specialist Environmental Programs Section crescarpeta@co.pg.md.us 301-883-5990
Impervious Surfaces	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Catherine Escarpeta, GIS Specialist Environmental Programs Section crescarpeta@co.pg.md.us 301-883-5990
Monitoring Locations	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Outsourced
Watershed Restoration	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Outsourced

TABLE A1, CONTINUED KEY PRINCE GEORGE'S COUNTY STAFF			
Permit Condition	**Responsible Party**		
	Department/ Division	**Manager, Title/ E-mail Address, Telephone**	**Technical Personnel, Title/ E-mail Address, Telephone**
Management Programs			
Stormwater Management			
SWM Programmatic Information	DPIE/SRRD	Rey de Guzman, Chief Site/Road Review Division redeguzman@co.pg.md.us 301-636-2060	Deming Chen, Engineer III Site/Road Review Division dchen@co.pg.md.us 301-636-2060
SWM Design Manual	DPIE/SRRD	Mary Giles, PE, Associate Director Site/Road Review Division mcgiles@co.pg.md.us 301-636-2060	Rey de Guzman, Chief Site/Road Review Division redeguzman@co.pg.md.us 301-636-2060
Private BMP Inspection and Enforcement	DoE/SMD	George Nicol, Section Head Inspection Compliance Section gsnicol@co.pg.md.us 301-883-5976	Satinder Sachdeva, CSI III Inspection Compliance Section sssachdeva@co.pg.md.us 301-883-5830
Public BMP Inspection and Maintenance	DPW&T/OHMD	Gwen Clerkley, Associate Director Office of Highway Maintenance gtclerkley@co.pg.md.us 301-499-8522	Vernon Stinnett, Division Chief Storm Drainage Maintenance Division vlstinnett@co.pg.md.us 301-499-8520
Erosion and Sediment Control			
Green Card Training	DPIE/ID	Michael Reahl, Code Enforcement Officer, Inspections Division mreahl@co.pg.md.us 301-883-3820	Andre Stewart, CSI Inspections Division astewart@co.pg.md.us 301-883-3820
Quarterly Grading	DPIE/SRDD	Rey de Guzman, Chief Site/Road Review Division redeguzman@co.pg.md.us 301-636-2060	Deming Chen, Engineer III Site/Road Review Division dchen@co.pg.md.us 301-636-2060
Illicit Connection and Enforcement Program			
Field Screening and Outfall Sampling	DoE/SMD	George Nicol, Section Head Inspection Compliance Section gsnicol@co.pg.md.us 301-883-5976	Paul DeSousa, Planner IV Inspection Compliance Section pddesousa@co.pg.md.us (301) 883-5871
Investigation and Enforcement	DoE/SMD	George Nicol, Section Head Inspection Compliance Section gsnicol@co.pg.md.us 301-883-5976	Paul DeSousa, Planner IV Inspection Compliance Section pddesousa@co.pg.md.us (301) 883-5871
	HD/EED	Manfred Reichwein, Program Chief Environmental Engineering mreichwein@co.pg.md.us 301-883-7632	See program manager
	FD/EMS	Dennis Wood, MS, NR-P Assistance Chief, Fire/EMS dcwood@co.pg.md.us 301-883-7437	See program manager

TABLE A1, CONTINUED KEY PRINCE GEORGE'S COUNTY STAFF			
Permit Condition	**Responsible Party**		
	Department/ Division	**Manager, Title/ E-mail Address, Telephone**	**Technical Personnel, Title/ E-mail Address, Telephone**
County Property Management			
Countywide Pollution	DoE/SMD	George Nicol, Section Head Inspection Compliance Section gsnicol@co.pg.md.us 301-883-5976	Kemba Saibou, Planner III Inspection Compliance Section ksaibou@co.pg.md.us 301-883-5958
Implementation of Road Maintenance Activities			
Street Sweeping	DPW&T/OHMD	Gwen Clerkley, Associate Director Office of Highway Maintenance gtclerkley@co.pg.md.us 301-499-8522	Michael Brown, Division Chief Special Service Division mobrown@co.pg.md.us 301-499-8520
Storm Drain Maintenance	DPW&T/OHMD	Gwen Clerkley, Associate Director Office of Highway Maintenance gtclerkley@co.pg.md.us 301-499-8522	Vernon Stinnett, Division Chief Storm Drainage Maintenance Division vlstinnett@co.pg.md.us 301-499-8520
Roadside Litter Control	DPW&T/OHMD	Gwen Clerkley, Associate Director Office of Highway Maintenance gtclerkley@co.pg.md.us 301-499-8522	Michael Brown, Division Chief Special Service Division mobrown@co.pg.md.us 301-499-8522
Snow and Ice Control	DPW&T/OHMD	Gwen Clerkley, Associate Director Office of Highway Maintenance gtclerkley@co.pg.md.us 301-499-8522	See program manager
Public Education			
Community Outreach and Education	DoE/SID	Deborah Weller, Planner IV Community Outreach Promoting Empowerment dmweller1@co.pg.md.us 301-883-7161	See program manager
	DoE/Director Office	Linda Lowe, Public Information Specialist Communications & Community Engagement Section lmlowe@co.pg.md.us 301-883-5952	See program manager

TABLE A1, CONTINUED KEY PRINCE GEORGE'S COUNTY STAFF			
Permit Condition	**Responsible Party**		
	Department/ Division	**Manager, Title/ E-mail Address, Telephone**	**Technical Personnel, Title/ E-mail Address, Telephone**
Watershed Assessment and Planning			
Bay TMDL/ WIP II	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	See program manager
Biological Assessment and Stream Monitoring	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Outsourced
MS4 Watershed Planning	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	See program manager
Watershed Restoration			
Water Quality Retrofits	DoE/SMD	Frank Galosi, Section Head Capital Projects Design Section flgalosi@co.pg.md.us 301-883-5876	See program manager
Construction of SWM Retrofits	DoE/SMD	Dan Rybak, Section Head Capital Projects Construction Section dorybak@co.pg.md.us 301-883-5980	See program manager
Assessment of Controls			
Watershed Restoration Assessment	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Outsourced
Stormwater Management Assessment	DoE/SMD	Jerry Maldonado, Section Head Environmental Compliance Section jgmaldonado@co.pg.md.us 301-883-5943	Outsourced
Program Funding			
	DoE/ASD	Michelle Russell, Associate Director Administrative Services Division mwrussell@co.pg.md.us 301-952-3954	Rushane Jones, Budget Analyst Budget and Procurement Section rmJones1@co.pg.md.us 301-883-5808

DEPARTMENT ADDRESSES:

DoE/DO:	*Department of the Environment, Director's Office* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SMD:	*Department of the Environment, Stormwater Management Division (SMD)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SMD/CPDS:	*Department of the Environment, SMD, Capital Projects Design Section (CPDS)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SMD/CPCS:	*Department of the Environment, SMD, Capital Projects Construction Section (CPCS)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SMD/I&CS:	*Department of the Environment, SMD, Inspection & Compliance Section (I&CS)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SMD/EPS:	*Department of the Environment, SMD, Environmental Programs Section (EPS)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SID:	*Department of the Environment, Sustainable Initiatives Division (SID)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SID/ESS:	*Department of the Environment, SID, Engineering Services Section (ESS)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SID/COPE:	*Department of the Environment, SID, Community Outreach Promoting Empowerment Section (COPE)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SID/R&DS:	*Department of the Environment, SID, Research & Development Section (R&DS)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/SID/PSS:	*Department of the Environment, SID, Program Support Section (PSS)* 1801 McCormick Drive, Suite 500, Largo, MD 20772
DoE/WMD:	*Department of the Environment, Waste Management Division (WMD)* 3500 Brown Station Road, Upper Marlboro, MD 20774
DPW&T:	*Department of Public Works and Transportation (DPW&T)* 9400 Peppercorn Place, Third Floor, Largo, MD 20774
DPW&T/OEPM:	*Department of Public Works and Transportation, Office of Engineering & Project Management (OEPM)* 9400 Peppercorn Place, Third Floor, Largo, MD 20774
DPW&T/OHMD:	*Department of Public Works and Transportation, Office of Highway Maintenance Division (OHMD)* 8400 D'Arcy Road, Forestville, MD 20747
DPIE:	*Department of Permitting, Inspections and Enforcement (DPIE)* 9400 Peppercorn Place, First Floor, Largo, MD 20774
HD/EED:	*Health Department, Environmental Engineering Division* 9201 Basil Court, Suite 318, Largo, MD 20774

FIGURE A1
DEPARTMENT OF THE ENVIRONMENT – OFFICE OF THE DIRECTOR ORGANIZATIONAL CHART

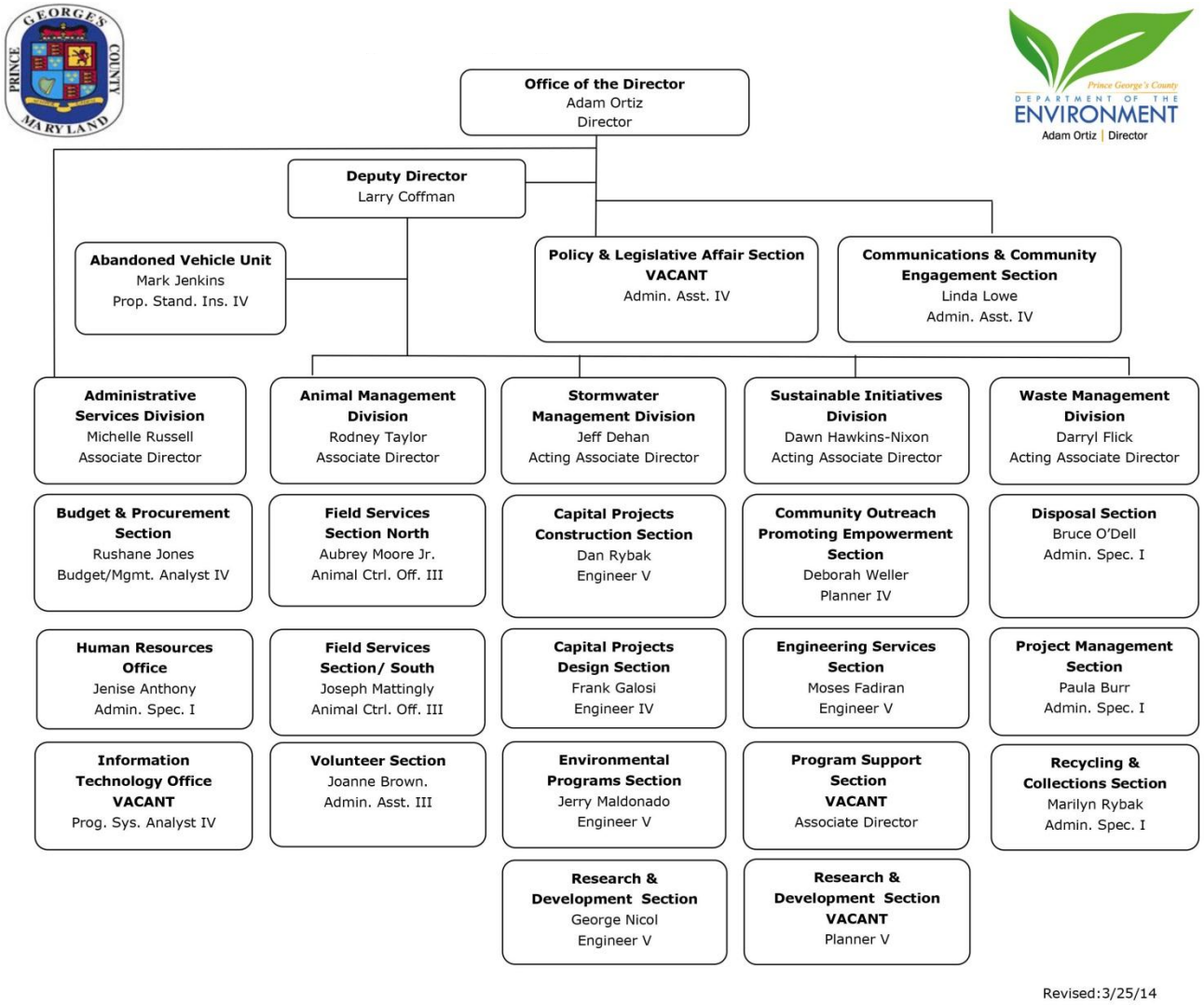


FIGURE A2
DEPARTMENT OF THE ENVIRONMENT – STORMWATER MANAGEMENT DIVISION ORGANIZATIONAL CHART

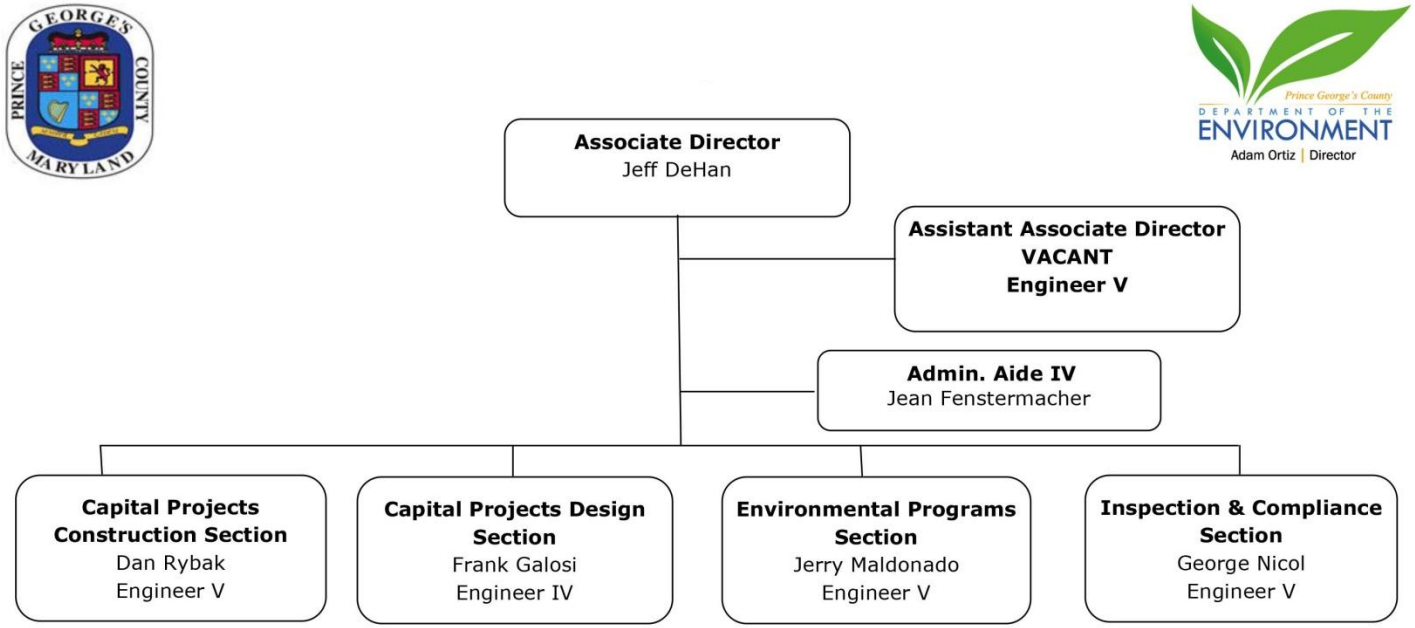


FIGURE A3
DEPARTMENT OF THE ENVIRONMENT – SUSTAINABLE INITIATIVES DIVISION ORGANIZATIONAL CHART

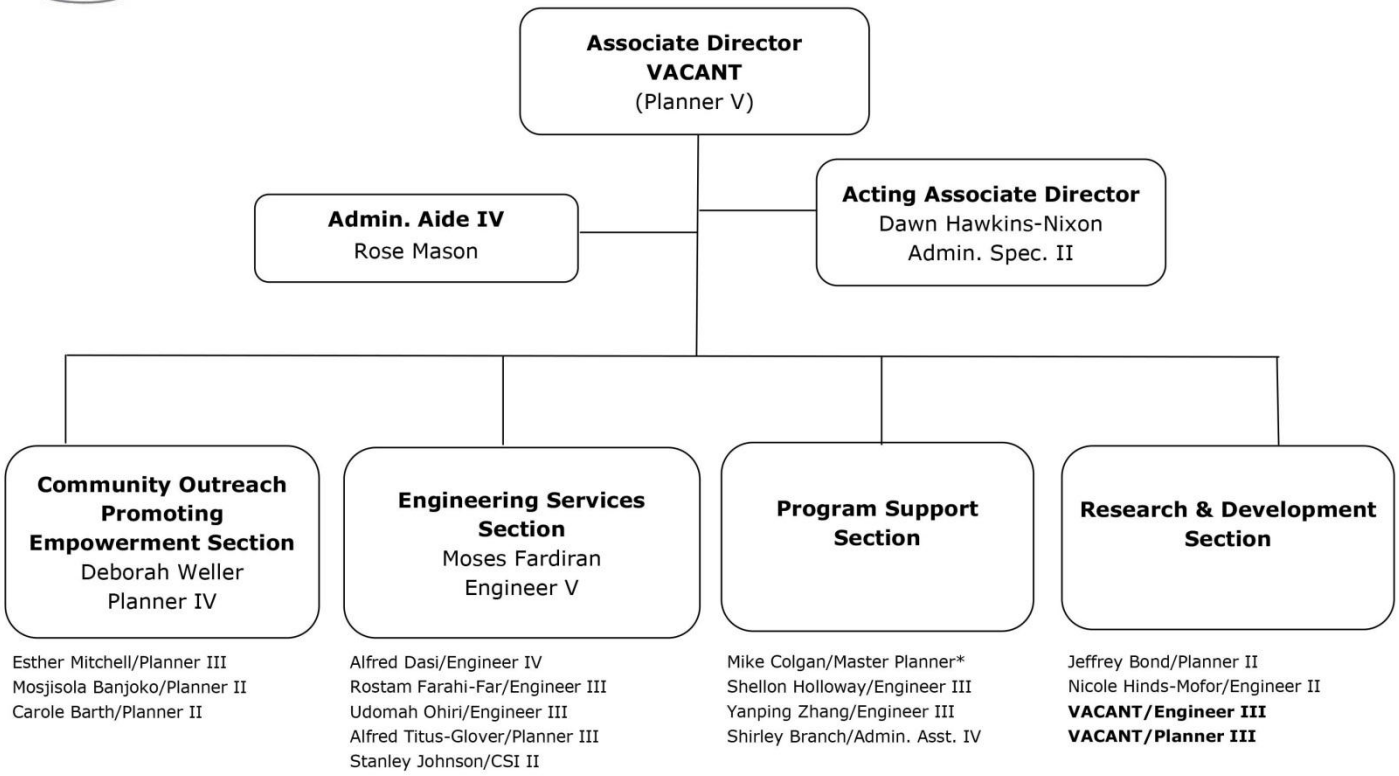


FIGURE A4
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION – OFFICE OF THE DIRECTOR ORGANIZATIONAL CHART

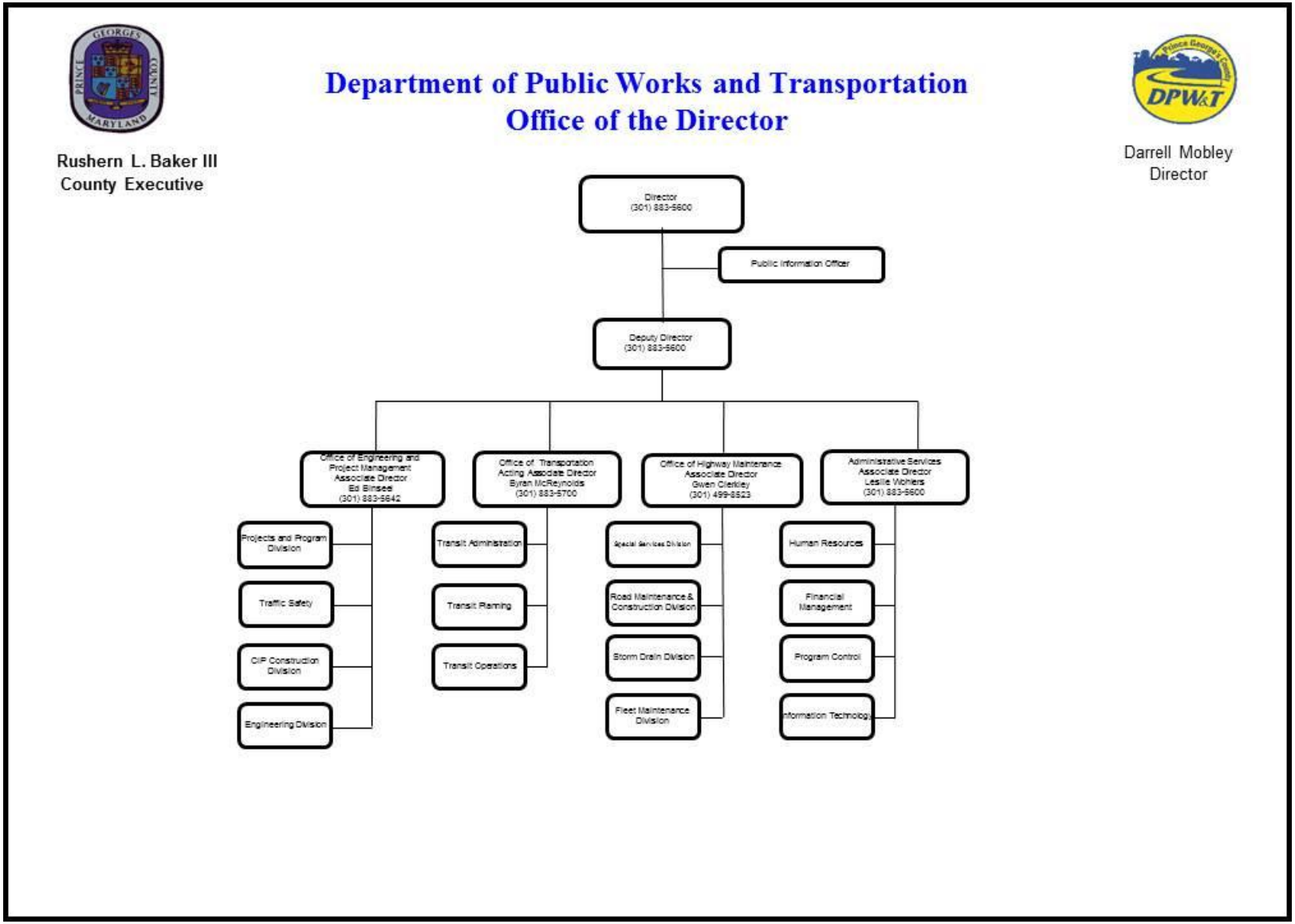


FIGURE A5
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION – OFFICE OF HIGHWAY MAINTENANCE DIVISION (OHMD) ORGANIZATIONAL CHART

FIGURE A6
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION, OHMD – STORM DRAIN MAINTENANCE DIVISION ORGANIZATIONAL CHART

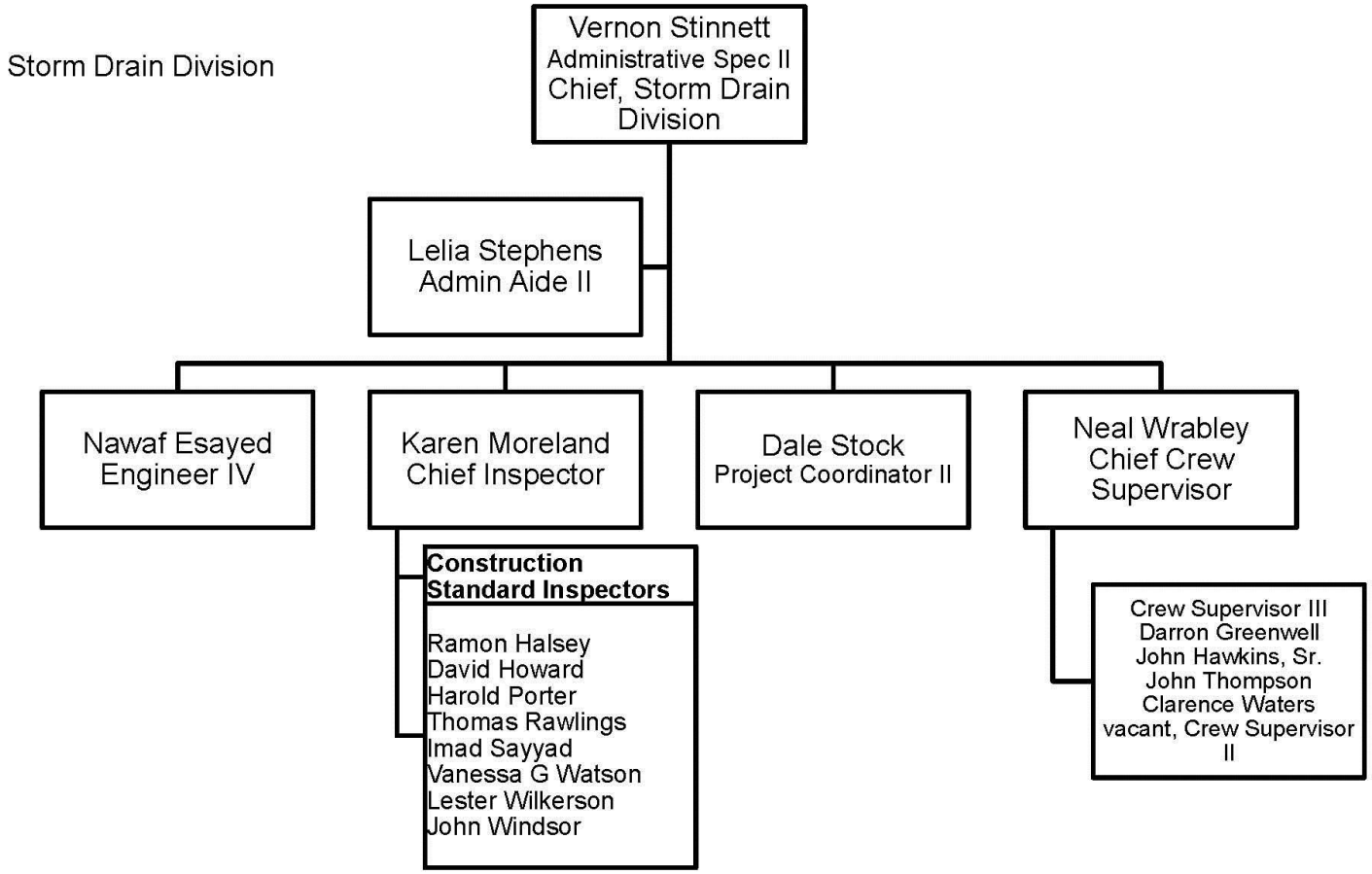


FIGURE A7
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION – OFFICE OF ENGINEERING & PROJECT MANAGEMENT ORGANIZATIONAL CHART

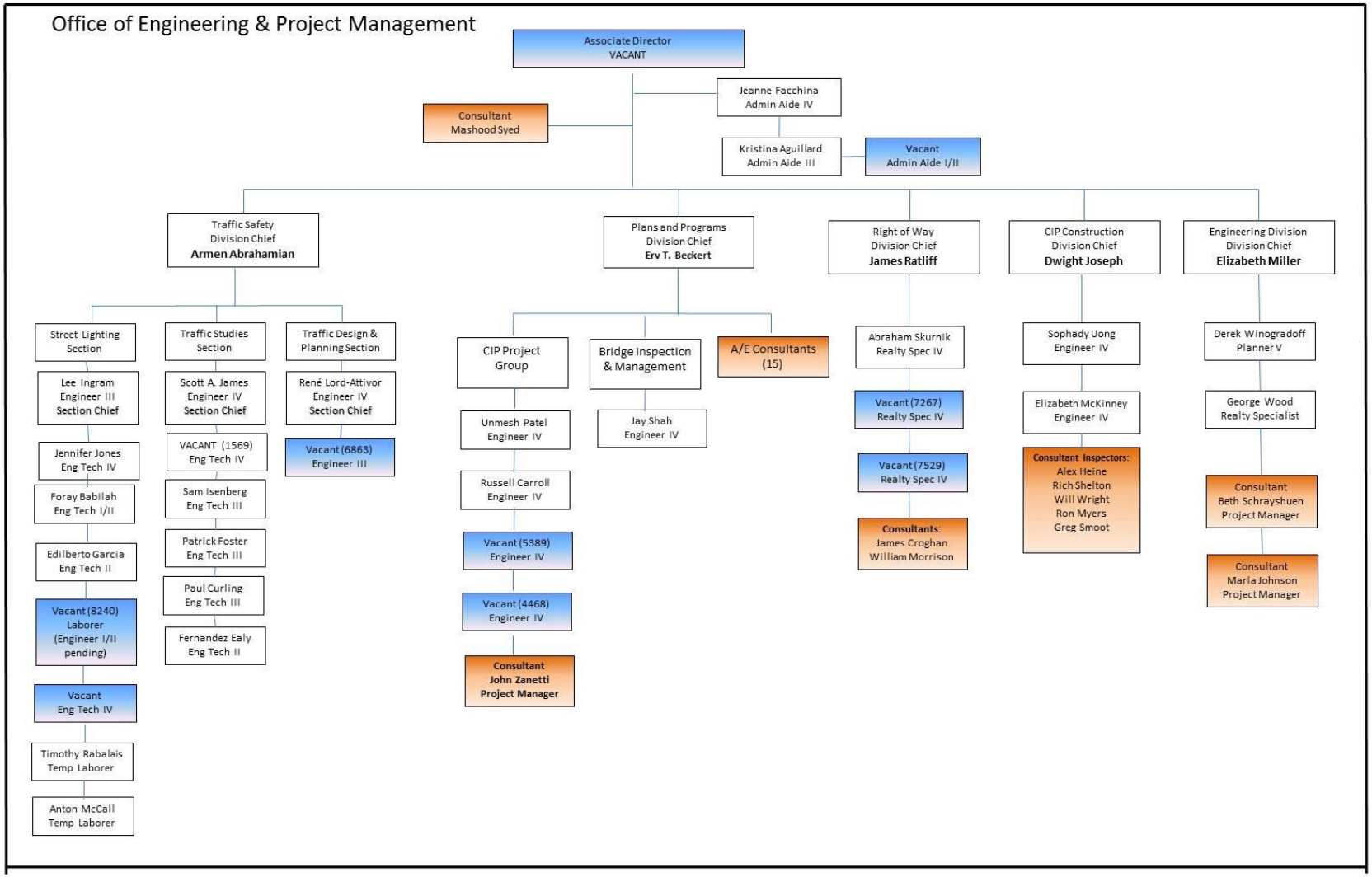


FIGURE A8
DEPARTMENT OF PERMITTING, INSPECTIONS AND ENFORCEMENT – ORGANIZATION AND STAFFING ANALYSIS SUMMARY, OFFICE OF THE DIRECTOR

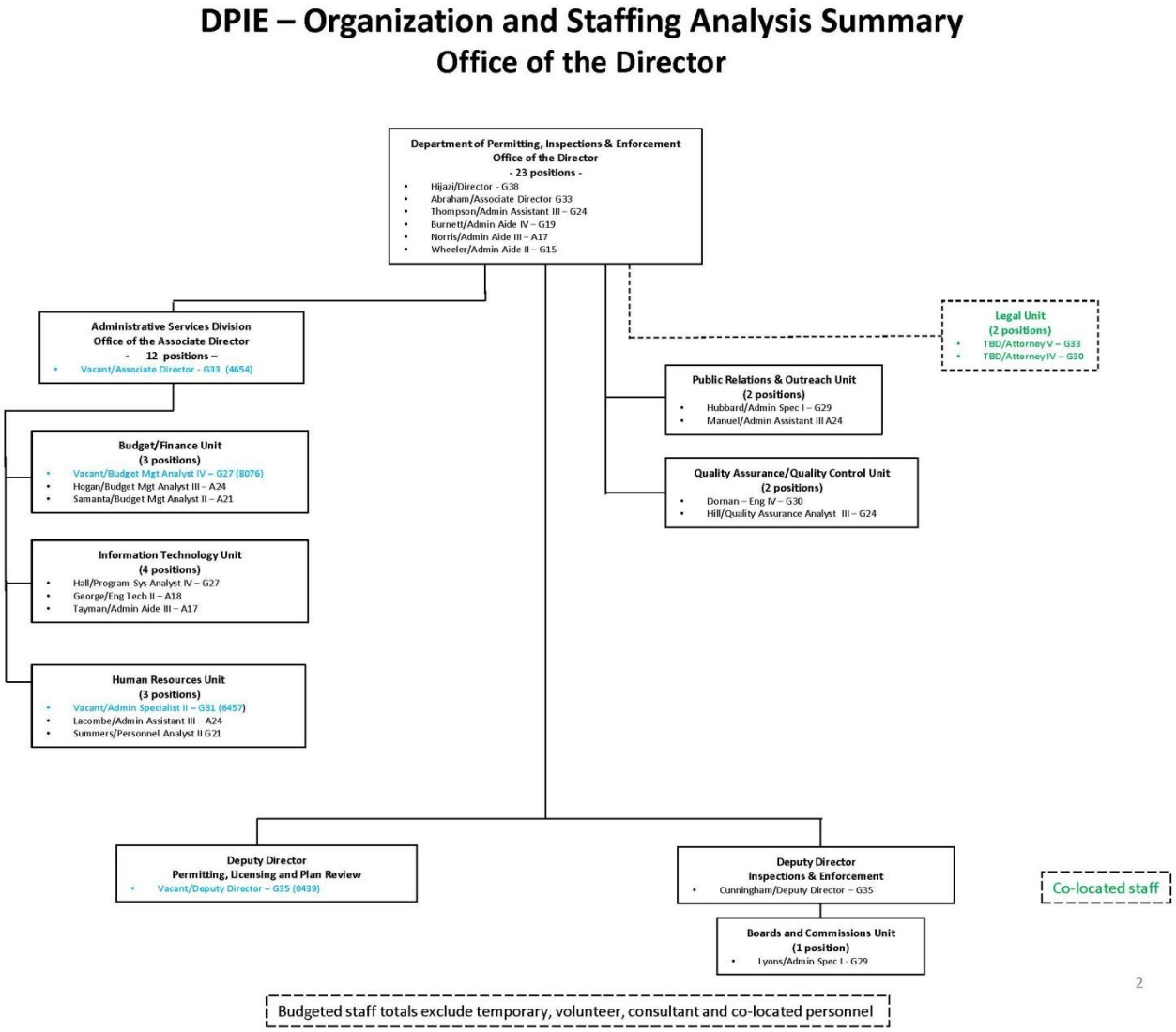


FIGURE A9
DEPARTMENT OF PERMITTING, INSPECTIONS AND ENFORCEMENT – ORGANIZATION AND STAFFING ANALYSIS SUMMARY, DIVISION OF PERMITTING & LICENSING

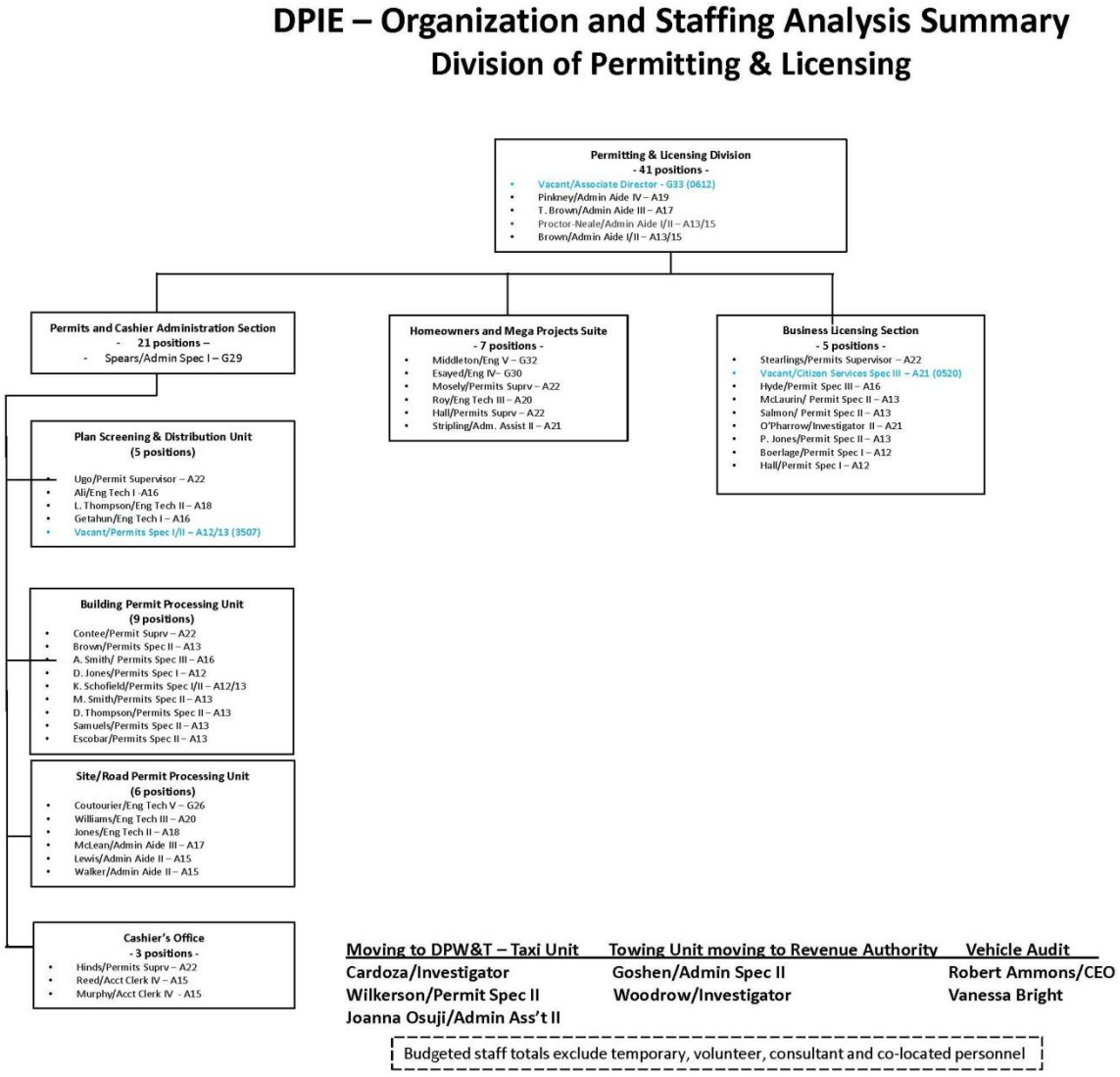


FIGURE A10
DEPARTMENT OF PERMITTING, INSPECTIONS AND ENFORCEMENT – ORGANIZATION AND STAFFING ANALYSIS SUMMARY, DIVISION OF SITE/PLAN REVIEW

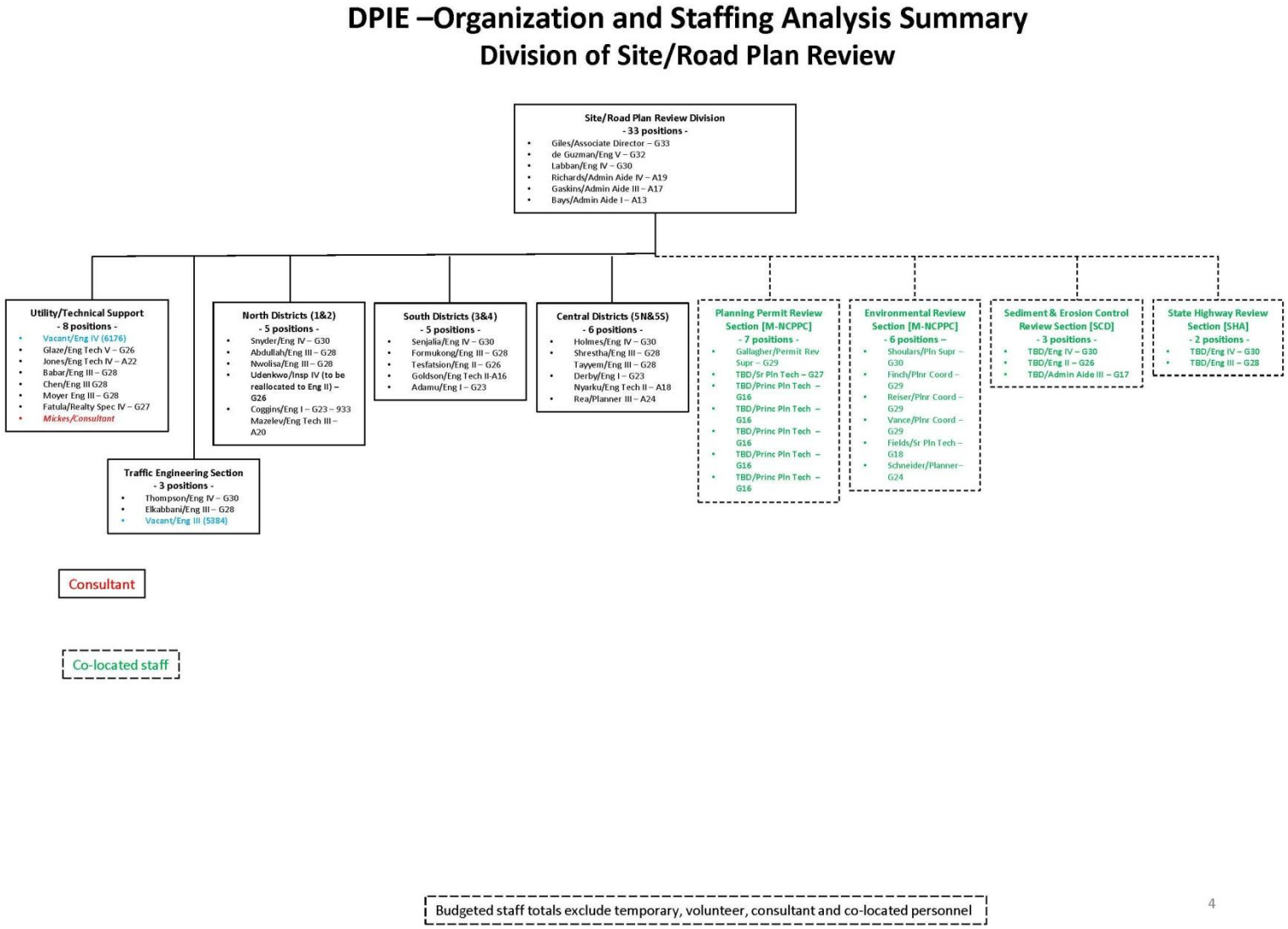


FIGURE A11
DEPARTMENT OF PERMITTING, INSPECTIONS AND ENFORCEMENT – ORGANIZATION AND STAFFING ANALYSIS SUMMARY, DIVISION OF BUILDING PLAN REVIEW

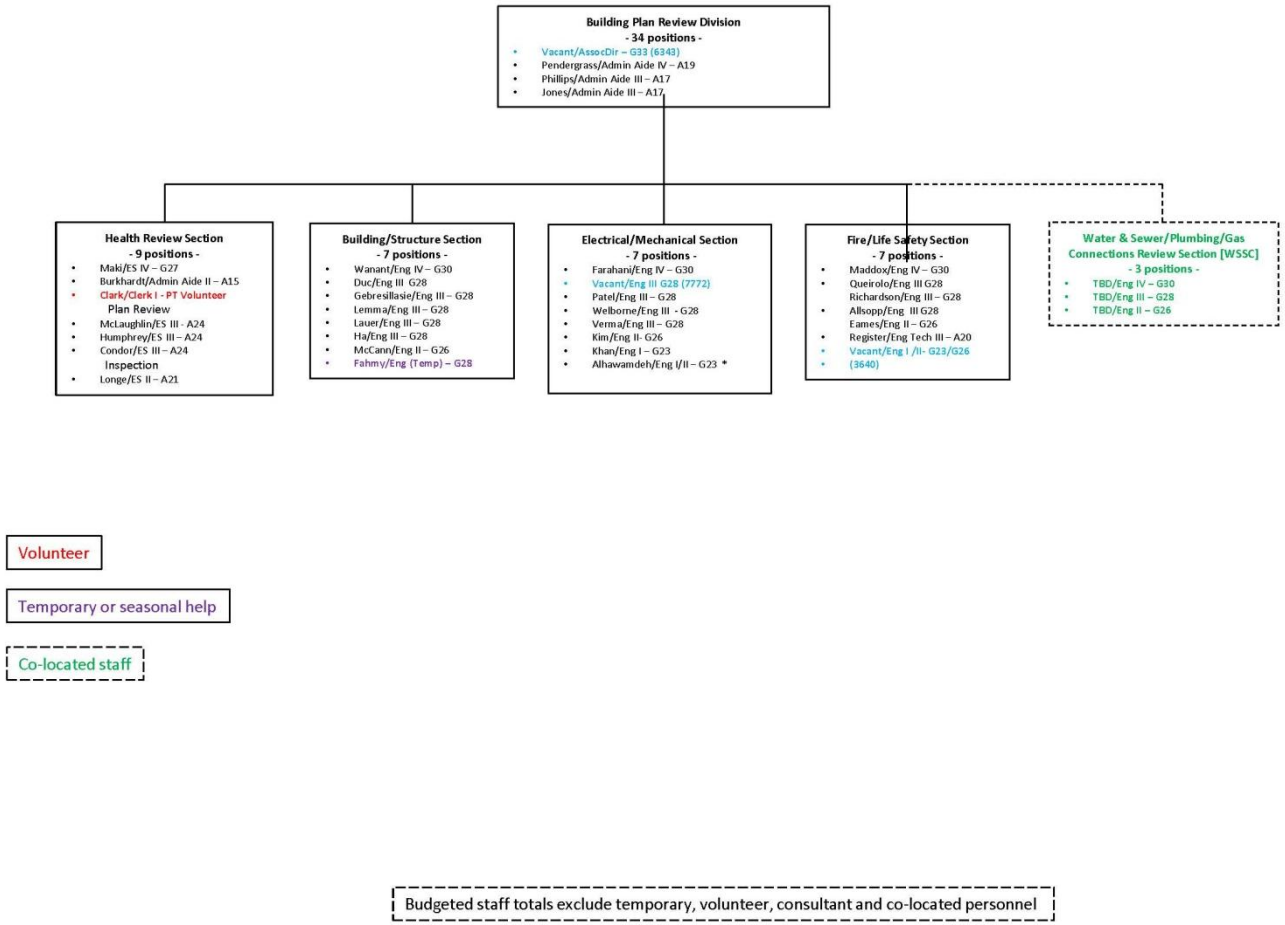


FIGURE A12
DEPARTMENT OF PERMITTING, INSPECTIONS AND ENFORCEMENT – ORGANIZATION AND STAFFING ANALYSIS SUMMARY, DIVISION OF INSPECTIONS

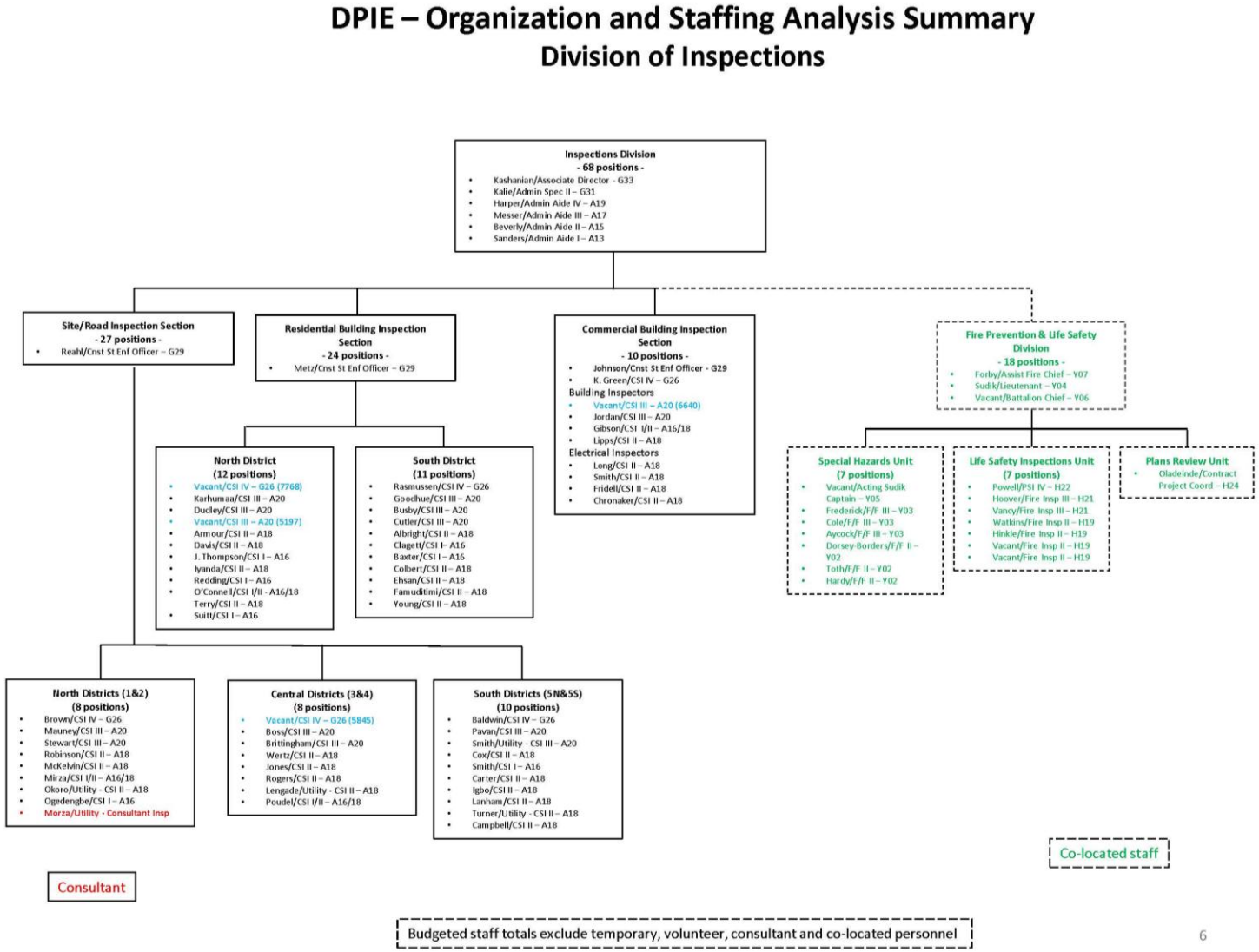
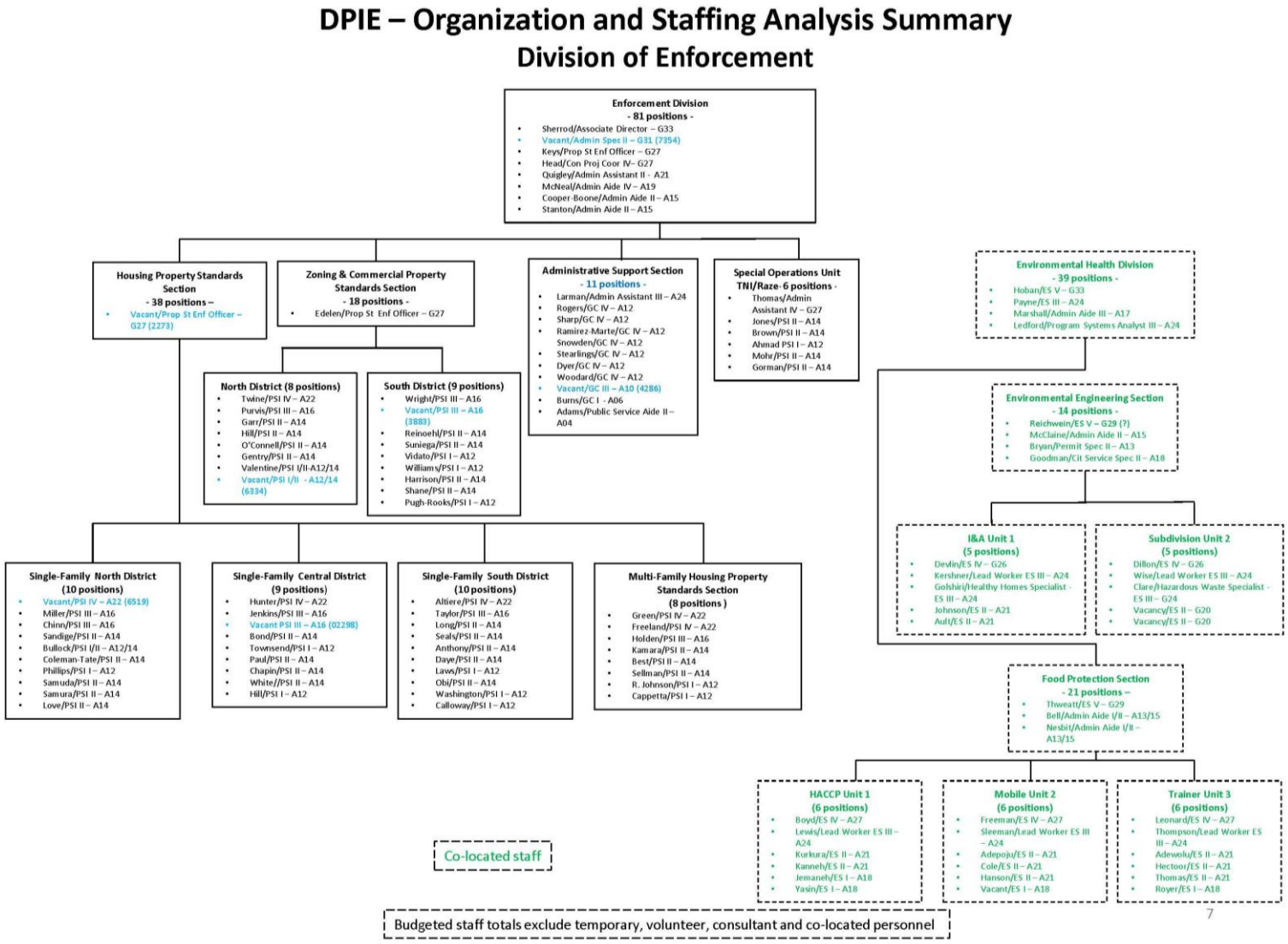


FIGURE A13
DEPARTMENT OF PERMITTING, INSPECTIONS AND ENFORCEMENT – ORGANIZATION AND STAFFING ANALYSIS SUMMARY, DIVISION OF ENFORCEMENT



B. LEGAL AUTHORITY

In 1993, Prince George's County revised its "Grading, Drainage and Erosion Control" Ordinance to provide the County with adequate legal authority to directly perform the activities described in 40 CFR 122.26(d)(2)(i). Legal authority was recertified by our County Attorney in 1999, and was accepted by MDE.

Prince George's County continues to maintain adequate legal authority throughout the term of this NPDES MS4 Permit. There were no changes made during this reporting period to invalidate our legal authority.

C. SOURCE IDENTIFICATION

1. STORM DRAIN SYSTEM

As noted during the County's 2012 Annual report, the County found that the SDI data (inlets, pipes, outfalls, contract ends, and manholes) was corrupt and for that reason the inventory was not provided in the 2012 annual report. Significant errors were caused by multiple SDIs hosted on the County's server. To rectify the problem, these multiple layers were merged into a single layer and the duplicate features were deleted. A QA/QC of the merged SDI layer was performed using standardized GIS validation rules for topology. This analysis found over 40,320 topology errors in the database. The errors were systematically corrected, to the best of our ability, by manually verifying the inventory against WSSC legacy data and aerial photography at the 200 foot scale. Additionally, the County has secured the services of a call contract to perform an outfall evaluation and bring the drainage area delineations up to date. The consultant services work is estimated to be complete by mid-November and the County will submit a complete SDI, point attributes and drainage area shapefiles, with the 2014 Annual Report.

The County recognizes the need for a comprehensive analysis of the storm drain system. As the agency responsible for managing these public assets; DPW&T has initiated the formulation of a Proposal Analysis Group (PAG) with the objective of performing a systemic evaluation of our existing system and cataloging the current condition of the storm drain infrastructure. Additionally, the PAG will be utilized to georeference structure and pipe data to support countywide stormwater management programs.

The following is a proposed schedule to complete a storm drain inventory and assessment:

- October 15, 2014 – PAG approval received
- October 15, 2014 – December 15, 2014 – Develop an Invitation for Consultant Services
- December 15, 2014 – June 15, 2016 – Selection of Consultant for beginning work and issuing Notice to Proceed (18 month process)
- July 15, 2016 – Inventory and assessment process begins
- July 15, 2018 – Inventory and assessment program complete

Preliminary Estimated Budget:

- Selection process and preliminary investigative work: $250,000
- Completion of the work: $3,000,000

2. URBAN BEST MANAGEMENT PRACTICES (BMP)

The County has been working on a three step process to bring the BMP inventory up to date. The first step, which has been completed, is to identify all projects completed between the third quarter of 2011 through the first quarter of 2013 and enter all site and BMP data into the database. The second step, which is in progress utilizing consultant services, is to capture and report missing drainage area data for the 342 records that were missing drainage area in the 2012 submission and new records created in step one. The third step, which has been completed, is to research, capture and report missing as-built data for 435 records missing as-built data in the 2012 submission. The County will have all three steps completed by the end of November and a complete database will be submitted with the 2014 annual report.

3. IMPERVIOUS SURFACES

The County has completed two of the three analyses needed to report the impervious surfaces database. The MS4 regulated permit area and associated impervious area has been completed and a description of the methodology utilized and the geodatabase is provided on DVD, Source Identification\Impervious Surfaces\Regulated Land. As the digitization of the drainage area shape files and entering completion dates for all BMPs in the Urban BMP database is still in process, work to categorize the regulated area as treated to the MEP, partially treated or untreated is not yet available. An updated Urban BMP database will be available before the end of the calendar year and we expect that we can complete the analysis by the first quarter of 2015. Once completed, this data will be integrated with the watershed restoration projects geodatabase provided on DVD, Source Identification\Restoration Project to create the impervious surface database.

4. MONITORING LOCATIONS

The established chemical, biological, and physical monitoring locations for stormwater monitoring in the Black Branch watershed and watershed restoration monitoring in the Bear Branch watershed are provided on DVD, Assessment of Controls\Bear Branch.

5. WATERSHED RESTORATION

The location, drainage area shapefile and description of each of the County's watershed restoration projects are provided on DVD, Source Identification\Restoration Project.

D. DISCHARGE CHARACTERIZATION

Reporting for monitoring activities performed during this reporting year are located in Section H, Assessment of Controls. These include:

Watershed Restoration Assessment
Bear Branch

SWM Discharge Characterization
Black Branch

E. MANAGEMENT PROGRAMS

1. STORMWATER MANAGEMENT PROGRAM

STORMWATER MANAGEMENT ORDINANCE

The County adopted a revised stormwater management (SWM) Ordinance on July 19, 2011. Stormwater control for land development, both new and redevelopment is codified under the Water Resources Protection and Grading Code, Title 17, Subtitle 32, Division 3, Subdivision 3 of the County Code. Subtitle 32 also regulates disturbed area, grading, sediment and erosion control, and pollution control. MDE approved Prince George's County's SWM Ordinance on December 20, 2011.

During the reporting year, the County adjusted references in the County Code to reflect the new permitting agency responsibilities as they relate to grading and stormwater management. Concurrently, DPIE staff worked with MDE to initiate the process of incorporating the State's new Erosion and Sediment Control Model Ordinance into the County Code. DoE also initiated work to revise the Floodplain Ordinance to reflect Federal Emergency Management Agency (FEMA) regulatory changes.

STORMWATER MANAGEMENT DESIGN MANUAL REVISION

The County secured the services of an engineering consultant to lead the SWM design manual revision process. The initial plan for a simple revision of the design manual has been adjusted. Components of the manual now include new design review checklists, inspector checklists, and new permitting procedures to comply with County and State stormwater program requirements. While the design manual schedule has been delayed, we believe the completed manual and the associated appendices represent the most comprehensive effort in the State. The following information presents the updated schedule:

- Comprehensive First Draft – December 2013
- Distribute draft for internal/external agency review – January 2014
- Distribute the draft to the stakeholders – January 2014
- Distribute the draft to the MDE for initial review – January 2014
- Collection of comments – January through May 2014
- Response to comments from stakeholders and MDE – August 2014
- Technical Editor review – August and September 2014
- Receive final comments and approval from MDE– September 2014
- Distribute to County Executive and the Office of Law for sufficiency review – October 2014 (anticipated)
- Legal review/approval – November 2014 (estimated)
- County Council review/approval – December 2014 (anticipated)
- Introduce legislation to adopt the manual – December 2014 (estimated)
- Adoption of SWM Design Manual reference – After January 2015, depending upon the results of the County Council hearing process.

SPECIFICATIONS AND STANDARDS REVISIONS

The County is also in the process of revising "Specifications and Standards for Highways and Bridges" and "Standard Details for Stormwater Management Construction" into a single document. The purpose of the revision is to compile all drainage details and standards into one document, update current standards and to remove design impediments to green street design and environmental site design (ESD) to the maximum extent possible (MEP). DPW&T will work closely with DPIE, DoE, Prince George's Soil Conservation District (PGSCD), and M-NCPPC to ensure completeness. The process will also entail legislative review and County Code adjustments. It is anticipated that the revisions will be completed during the FY 2016 reporting year.

STORMWATER MANAGEMENT PROGRAMMATIC TRACKING

The County incorporated MDE's three phase comprehensive review for all new and redevelopment projects. As critical decisions on stormwater controls are implemented at the Concept Plan approval phase, the County has prioritized the development of a geodatabase to track stormwater implementation policy decisions, maintenance responsibility, watershed location, and types of BMPs at this stage of the development process. The geodatabase also has the capacity for tracking new and redevelopment activities to ensure all projects evaluate ESD practices as a first option in controlling stormwater. A copy of the geodatabase is provided on DVD, Management Programs/Stormwater Management/Development Program.

The geodatabase will provide the County with a tool to identify development trends and track progress in implementing ESD to the MEP. The County conducted an extensive analysis of stormwater controls approved at the Concept Plan stage of the development process, with a representative example of the type of data analysis possible provided in Table E1.

TABLE E1
STORMWATER MANAGEMENT CONCEPT PLAN APPROVALS BY WATERSHED

MDE 8-digit code	Watershed Name	Number of Plans	Disturbed Area (Acres)	Proposed Impervious Area (Acre)
02140205	Anacostia River	102	362.55	187.33
02131103	Western Branch	55	834.23	512.45
02131104	Patuxent River Upper	32	192.07	105.22
02140201	Potomac River Upper (Tidal)	28	264.61	80.05
02140203	Piscataway Creek	26	306.03	63.92
02140111	Mattawoman Creek	9	237.88	126.06
02140204	Oxon Run	8	13.36	9.78
02131102	Patuxent River Middle	6	28.62	7.94
02131101	Patuxent River Lower	5	11.39	2.65
02131107	Rocky Gorge	1	8.33	4.23
02140102	Potomac River Middle (Tidal)	1	16.75	2.10
02140108	Zekiah Creek	0	0	0

A summary of the stormwater controls approved during the concept plan approval phase is provided below:

- 273 Concept Plans Approved in 2013.
- 1176 BMPs associated with the 273 concept approvals, of which, 1003 BMPs will be privately maintained and 173 will be publicly maintained.

The development of the geodatabase will also be utilized to meet the internal reporting mandates of Subtitle 32 of the Prince George's County Code:

> **Sec. 32-201. Annual Report.**
> Starting in 2013, the Department shall issue an annual report and analysis by December 31st to the County Executive and the County Council on the implementation of and compliance with the stormwater management provisions contained in this Division, including projects that received administrative waivers under Section 32-170 (d), incentives under Section 32-175 (e) and variances under Section 32-176.

As shown in Figure E1, the mapping capabilities of the geodatabase also provide staff with an excellent tool for the required annual stormwater program reporting to the County Council.

POST-CONSTRUCTION BMP INSPECTION AND MAINTENANCE RESPONSIBILITY

Early in the development process, prior to design, permit or construction, the ownership and maintenance responsibility of all SWM appurtenances are established under Section 32-194 of the County Code. Any SWM measure which serves a single lot or parcel shall be privately owned and maintained with SWM measures relying on vegetated areas or site features shall be privately owned and maintained, unless located on public property. All other stormwater management facilities (SWMFs) shall be publicly owned and maintained.

Local code also assigns the responsibility for conducting preventative maintenance inspections of public infiltration systems, bioretention, retention, or detention structures to DPW&T with the inspection responsibility for privately maintained facilities assigned to the owner of record. DoE is responsible for ensuring that inspection reports for privately maintained facilities comply with the approved maintenance agreement. A "Declaration of Covenants" or maintenance agreement must be recorded in the County's land records prior to the issuance of a Use and Occupancy Permit. Maintenance agreement language explicitly states that the property owner is solely responsible for the construction and perpetual maintenance of the BMP, in accordance with the approved County SWM plan.

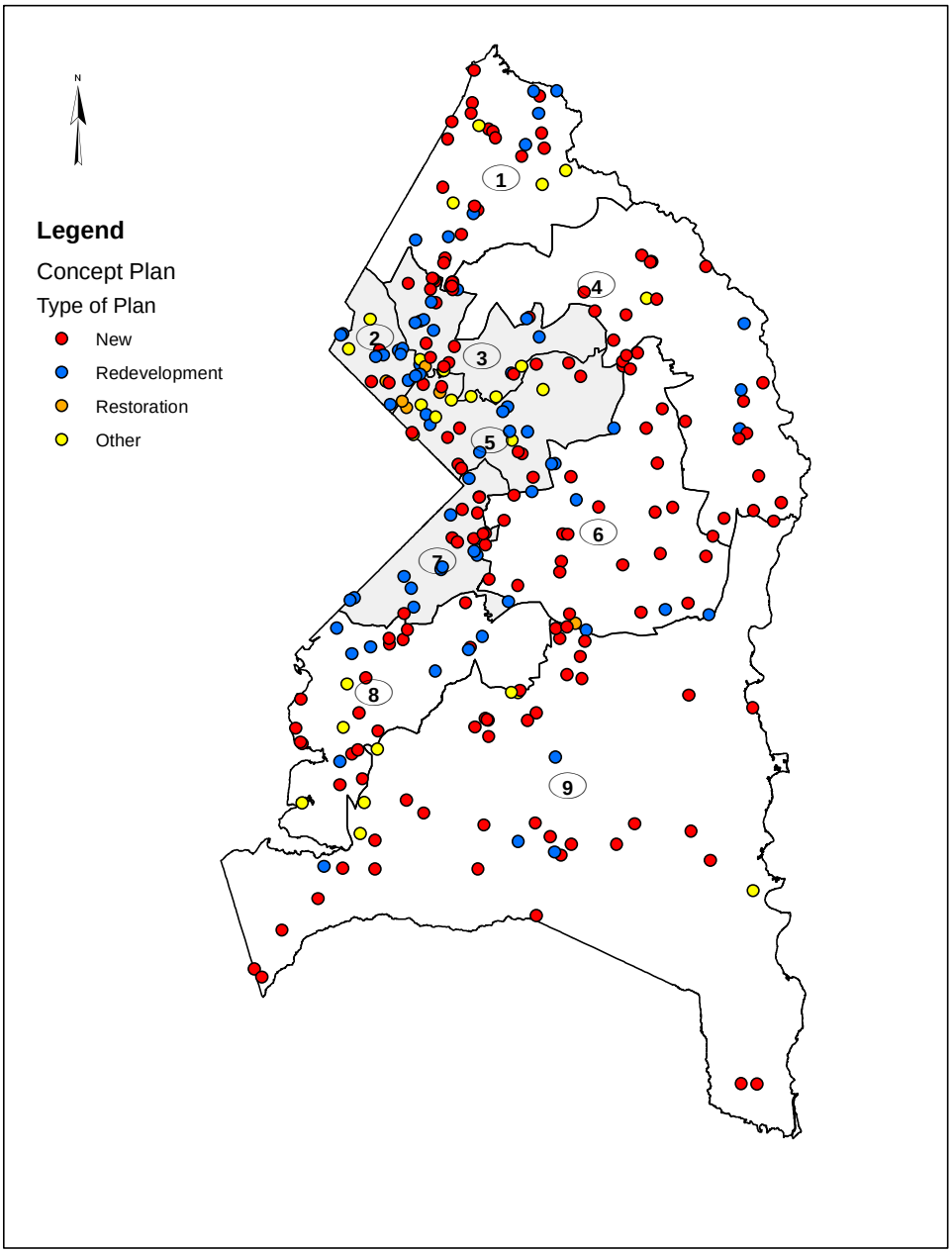
PREVENTATIVE MAINTENANCE INSPECTIONS OF PUBLIC FACILITIES

Recognizing the need for an accurate accounting of all publically maintained ponds, DPW&T entered into a contractual agreement with McCormick Taylor in 2008 to electronically catalog, inspect and provide remedial plan of action, if appropriate, for all publicly maintained ponds in the inventory. As part of the contract, triennial pond inspections were completed between November 2009 and October 2010, with the inspection results provided in the 2010 Annual Report. Major maintenance for the 68 ponds rated as either "D" or "E", ponds identified during the inspection process as having moderate or severe problems, are being administered

under the Deficient Pond Program. Project scoping was completed for an additional 10 facilities during this reporting period; with construction for 52 facilities completed under this program.

Rehabilitation and landscaping is being managed for an additional 50 ponds under the County's Pilot Pond Community Program. Work was completed for 4 ponds this year bringing the 3 year completion total to 20. The project status for facilities managed under the Deficient Pond and Pilot Pond Programs is provided on DVD, Management Programs/Stormwater Management/Maintenance.

FIGURE E1
STORMWATER MANAGEMENT CONCEPT PLAN APPROVALS BY COUNCILMANIC DISTRICTS
(11/01/2012 – 12/31/2013)



During this triennial inspection cycle, the years 2011 through 2013, 169 comprehensive pond inspections were performed by the County's consultant. A copy of the inspection database is provided on DVD, Management Programs/Stormwater Management/Maintenance. Non-public BMPs in the County's Urban BMP database, primarily infiltration trenches, were not inspected during this reporting period. To expand the capacity of the existing public BMP inspection program to address this deficiency, DPW&T executed a consultant services task order to expand their services by 200 inspections per year. Initially, the County anticipated that full compliance with the triennial inspection mandate could be achieved in calendar year 2015. However, the budget request to hire an additional 8 staff was not approved for fiscal year 2015 and consequently compliance may not be achievable as planned.

In addition to the 169 comprehensive pond inspections conducted during the past three years, DPW&T forces evaluate each pond at the time of twice-yearly pond mowing. These evaluations identify and correct simple, everyday issues related to pond maintenance, such as debris removal and woody vegetation eradication from dam embankments. Maintenance issues discovered during this evaluation process are escalated to a higher level of inspection as warranted. The OHMD also investigated approximately 200 citizen requests related to ponds annually. Although the County performs public BMP inspections using three methodologies; comprehensive inspections via contract services, visual evaluations during mowing and site visits in response to citizen requests, a database linking inspection results to a specific BMP is not yet available.

PREVENTATIVE MAINTENANCE INSPECTIONS OF PRIVATE FACILITIES

The County initiated a preventative maintenance inspection program for private facilities in April 2008. Development of a *Stormwater Management BMP Inspection Manual* followed in 2009 with the Standard Operation Procedures (SOPs) developed in 2010. In 2011, field inspection forms and correspondence templates were developed to streamline the inspection process and reflect Subtitle 32 legislative changes. Table E2 provides a summary of annual inspections since the program's inception in 2009.

TABLE E2
PRIVATE BMP INPECTIONS PERFORMED BY PROGRAM YEAR

Year	Number of Initial Inspections	Percentage of BMPs Inspected Triennially	Number of Facilities Re-Inspected	Total Number of BMP Inspections
2009	78	11%	36	114
2010	179	22%	92	271
2011	166	45%	80	245
2012	60	43%	134	194
2013	280	72%	118	398

In January 2014, the County conducted an analysis of the inspection and maintenance responsibility for each BMP in the Urban BMP database, the base layer utilized to administer the private BMP inspection program. As of January 2014, the number of private BMPs in the inventory was 701. At that time maintenance inspections had been performed on 506 of the 701 private facilities in the inventory with the triennial compliance rate increasing from 43% during the previous reporting year to 72% for this reporting year. The significant increase in the number of inspections performed during this reporting year was due the reorganization of DoE,

including the reassignment of staff duties to address MS4 compliance deficiencies. A breakdown of the number and type of facilities inspected during this reporting period is provided in Table E3.

TABLE E3
NUMBER OF BMP INPECTIONS BY STRUCTURE TYPE – 2013

Structure Type Subcategory	Number Inspected
Aquafilter	1
Bioretention	83
Detention Structure - Dry	9
Extended Detention Structure - Dry	3
Extended Detention Structure - Wet	4
Grass Swale	1
Infiltration Basin	1
Infiltration Trench	58
Oil-Grit Separator	42
Retention Pond (Wet Pond)	29
Sandfilter	3
Stormfilter	1
Stormceptor	32
Underground Storage	13
TOTAL	**280**

Property owner corrective action is indicated for 70% (196 BMPs) of the facilities inspected, which will require County re-inspection to verify compliance. The remaining 30% of the facilities (84 BMPs) inspected were found to be in compliance. The private BMP inspection database is provided on DVD, Management Programs/Stormwater/Management/Inspections/ Private BMPs.

A significant impediment to full compliance with the triennial inspection mandate for private facilities are the 188 single family residential or homeowner association property BMPs, primarily rain gardens, which were constructed without a recorded maintenance agreement. Of the 701 private BMPs in the inventory, 27% were constructed without a recorded maintenance agreement. Without a recorded maintenance agreement, the County does not have the authority to require perpetual maintenance on these BMPs nor do we have the legal authority to enter the property to perform maintenance inspections, a right granted by the maintenance agreement. These facilities were assigned a low priority for inspection during the developmental stage of the program. Now that the program is fully functional and we have reached a triennial inspection rate of 72%, a strategy for the residential BMPs without maintenance agreements is under development.

2. EROSION AND SEDIMENT CONTROL

DELEGATION

In a letter dated March 29, 2013, MDE granted a request for continuing delegation effective through June 30, 2015. MDE's evaluation recognized that the erosion and sediment control regulations have not been updated in the County Ordinance. The updated regulation is tentatively scheduled to be heard by the County Council in the Fall of 2014.

Inspections are performed within three districts. Twenty-two sediment control inspectors performed a total of 13,020 sediment control inspections in FY 2013. Staff within DPIE, Inspection Division, shall continue to perform routine and demand inspections, in an effort to gain compliance with the approved plans and permits.

GREEN CARD PROGRAM

"Responsible Personnel Certification" courses were conducted on March 22, 2013, September 20, 2013 and October 2, 2013 with 69 people successfully completing the Green Card Certification. A Green Card Training spreadsheet is provided on DVD, Management Programs/SEC/Green Card.

QUARTERLY EARTH DISTURBANCE REPORT

During the 2013 calendar year, Prince George's County reported a total of 75 projects with earth disturbances of one acre or more. The total earth disturbance for these 75 projects was 944.25 acres. Copies of the disturbed area databases are provided on DVD, Management Programs/SEC/DisturbedArea.

3. ILLICIT CONNECTION AND ENFORCEMENT PROGRAM

FIELD SCREENING AND OUTFALL SAMPLING

In partnership with the County's Comprehensive Community Cleanup Program (CCCP), DoE completed field screening and outfall sampling on 159 outfalls located within the 21 communities served this year. This program is designed to revitalize, enhance, and help maintain unincorporated areas of the County, providing a wide range of clean up and maintenance services to a community over a two-week to one-month period. Outfall sampling serves to detect and eliminate stormwater pollutants and support clean and healthy communities. The outfall screening results are summarized in Table E4. Inspection and water quality testing results are provided on DVD, Management Programs/IDDE.

TABLE E4 COMPREHENSIVE COMMUNITY CLEANUP OUTFALL SAMPLING SUMMARY (11/01/12-12/31/13)				
Community	**Date(s) of Inspection***	**Number of outfalls Screened**	**Samples Taken**	**Illicit Discharges Detected**
Radiant Valley	03/04/13	2	0	0
West Laurel Phase 1	03/11/13	9	0	0
West Laurel Phase 2	03/22/13	12	3	0
Marlton Phase 1	03/28/13	12	0	0
Marlton Phase 2	04/04/13	7	0	0
Marlton Phase 3	04/11/13 and 04/16/13	9	0	0
Tantallon North	04/23/13	8	0	0
Carole Highlands	05/14/13	6	0	0
Chapel Oaks/Deanwood/Fairmont	05/22/13	3	0	0
Riverdale Heights/Crestwood/Riverdale	05/23/13	5	0	0
Kastle Estates	05/29/13	9	0	0
Fort Washington Estates	06/05/13	3	0	0
Presley Manor	06/21/13	7	0	0
Little Washington/Westphalia Estates	06/26/13	7	0	0
Willburn Estates/Rolling Rock	07/08/13 and 07/10/13	14	0	0
Maplewood	07/11/13	1	0	0
Kettering Phase 1	09/24/13 and 09/26/13	10	0	0
Kettering Phase 2	10/2, 10/17 and 10/18	10	0	0
Kettering Phase 3	10/18/13	12	0	0
Forestville Knolls/Forestville Park Estates	10/02/13	6	0	0
Kettering Phase 4	10/29/13	7	0	0
	TOTAL	**159**	**3**	**0**

** All inspections performed in 2013*

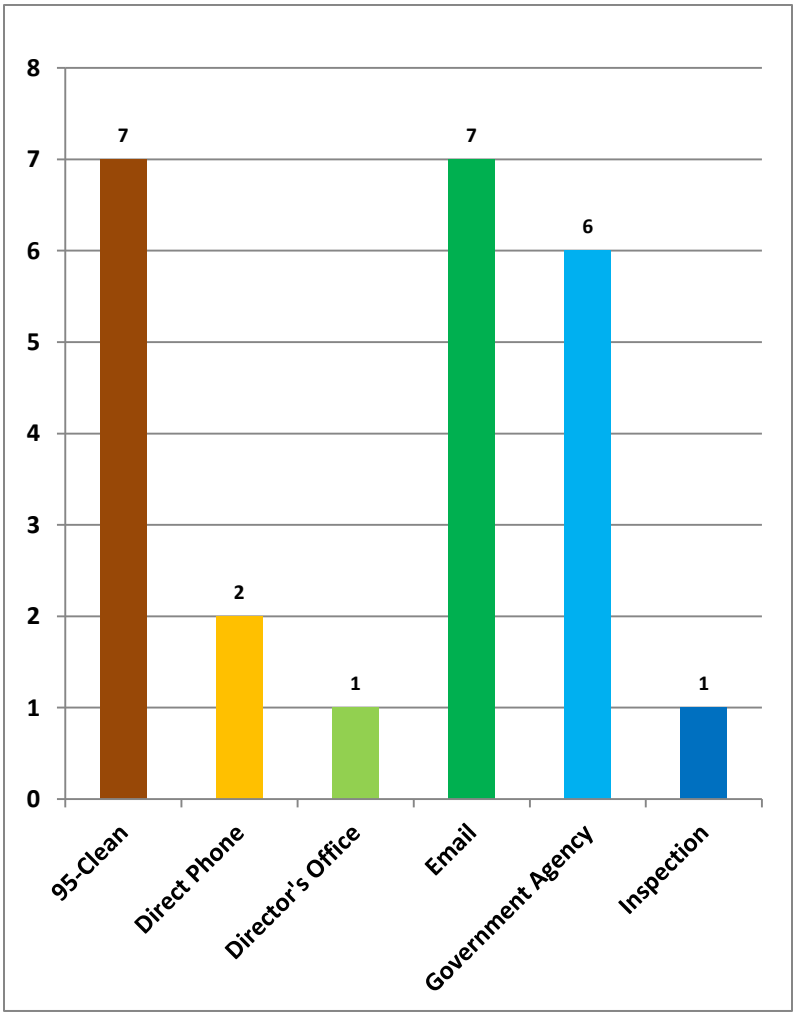
INVESTIGATION AND ENFORCEMENT PROGRAM

The County utilizes the full enforcement authority authorized by the County Code to investigate and eliminate illicit discharges. The County Code assigns the authority and responsibility for responding to and eliminating illicit discharges by type, activity or location. For instance, enforcement actions associated with violations involving the improper storage of materials and/or dumping on private property are governed under the Zoning Ordinance and Housing and Property Codes. Environmental enforcement; including disturbed area, grading, sediment and erosion control, is authorized under Subtitle 32. These enforcement responsibilities all fall within the authority of the Inspection and Enforcement Divisions of DPIE. The prevention of human exposure to sewage is administered by the Health Department (HD) in accordance with the On-Site Sewage Disposal Systems regulations; and, the control of hazardous chemicals or substances is governed by the Fire Safety Code.

The Inspection and Compliance Section, within the SMD of DoE, receives complaint referrals through the County's 311 system and maintains close communications with

environmental organizations throughout the County. In this capacity, DoE staff received 24 complaints during this reporting year through the types of communication summarized in Figure E2. Site investigations are performed on all incoming complaints with the exception of complaints that clearly fall within the purview of another agency, such as sediment and erosion control. To expedite a County response to those complaints, DoE staff immediately refers the investigation and corrective action, if warranted, to the responsible agency.

FIGURE E2
SOURCE OF INCOMING COMPLAINTS



Water quality infractions were field verified for 17 of the 24 investigations performed by DoE staff. Evidence of an illegal discharge or illicit connection to the storm drain system could not be located for the 7 remaining complaints. Of the 17 valid complaints identified, we were unable to locate the source for 1 complaint, 12 were referred to another agency for enforcement, and 4 were immediately corrected by the responsible party thereby eliminating the need for formal enforcement action. Table E5 provides a summary of enforcement actions taken by DoE to resolve valid water quality infractions.

TABLE E5 DoE WATER QUALITY VIOLATION ENFORCEMENT ACTIONS				
Category	No. of Investigations	Unable to Locate Source	Enforcement Action	
			No. of Cases Resolved Voluntary Compliance	No. of Cases Referred/Referral Agency
Improper Disposal of Waste	2	0	0	(2) MDE
Sediment	2	0	0	(2) DPIE
Sewage	4	0	0	(1) HD (1) MDE (1) WSSC (1) PSG
Oil Leak	1	0	1	N/A
Vehicle Maintenance	4	1	2	(1) DPIE
Vehicle Washing	1	0	0	(1) MDE
SWM SD Private	1	0	1	N/A
SWM SD Public	1	0	0	(1) DPIE
Other	1	0	0	(1) DPIE
TOTAL	**17**	**1**	**4**	**12**

ENVIRONMENTAL ENGINEERING PROGRAM

The Prince George's County HD Environmental Engineering Division (EED) responds to complaints about sanitary sewer overflows, failing septic systems, solid waste and hazardous materials spills/dumping that may impact the waters of the State. During this reporting period, the HD investigated 56 sites to assess threats to local streams and waters of the State from failing septic systems and public sewer overflows.

Understanding the need for more comprehensive reporting, and in response to MDE's Illicit Discharge Detection and Elimination (IDDE) program comments of the County's 2012 report, the HD is committed to future capturing and reporting of mandated data to meet the permit conditions for the IDDE Program. Starting in FY 2015, an Access database will be utilized to capture information including the nature of the complaint, our response to the complaint and any remedial action that was required. The database will also capture the latitude and longitude of the locations of the sewage overflow, illegal spills and dumping to aid in GIS mapping capabilities in the future. A copy of the HD correspondence is provided on DVD, Management Programs\IDDE.

ILLEGAL DUMPING AND SPILLS

The DPW&T responds to illegal dumping that occurs along the public road right-of-way and responds by removing the debris within five working days of notification. In 2013, the County received over 1,500 citizen requests for illegal dumping removal through the County's 311 system. For additional information on the County's road maintenance litter control program see page E-25.

The Prince George's County Fire/Emergency Medical Services Department Hazardous Materials Division (HMD) is responsible for handling the initial response to all hazardous material spills within the County. Between November 1, 2012 and October 31, 2013, the Prince George's County Hazardous Materials Team (HAZMAT) responded to 445 calls for assistance. The number of calls per month is provided in Table E6. Detailed investigation and response information, in the format required by the permit, is not available at this time, but an improved record keeping and reporting strategy is under development. Correspondence is provided on DVD, Management Programs\IDDE.

TABLE E6
HAZMAT CALLS PER MONTH

Month	Number
November 2012	37
December 2012	29
January 2013	49
February 2013	31
March 2013	34
April 2013	27
May 2013	30
June 2013	29
July 2013	49
August 2013	40
September 2013	46
October 2013	44
TOTAL	**445**

4. COUNTY PROPERTY MANAGEMENT

Nine County facilities are currently covered by a General Discharge Permit for Stormwater Associated with Industrial Activities (General Permit). There are 4 managed by DoE, 4 managed by DPW&T, and 1 facility managed by the Office of Central Services (OCS). The status of each County facility is provided in Tables E8 through E16. In preparation of the new regulatory mandates of the 12-SW Industrial Permits, DoE reviewed all facility stormwater pollution prevention plans (SWPPPs) and initiated plan updates that will reflect bmp development needs or controls for storage/stockpile areas. The updated SWPPPs will also meet the 12-SW mandates.

In 2013, the County instituted a program to monitor County facility progress regarding Industrial Permit and SWPPP progress. Submission of monthly facility inspection reports must now be submitted to the SMD on a monthly basis. Additionally, the County secured the services of a call contact to assist with SWPPP development and implementation, specifically the consultant has been tasked with conducting facility deficiency analyses and provide assistance with inspection and proposed corrective action. DoE also continues to take the lead in providing P2 training at County and municipal facilities, as summarized in Table E7. DoE purchased the latest municipal stormwater pollution prevention training kit by Excal Visual, LLP of Colorado for each facility. Training materials are on-site at each facility to ensure that all new staff has access to training.

TABLE E7 DoE LED 2013 INDUSTRIAL FACILITY TRAINING	
Facility Name	**Staff Level P2 Training**
BSR Landfill (DoE)	✓
Sandy Hill Landfill (DoE)	---
Materials Recycling (DoE)	✓
Vehicle Impound (DoE)	✓
Ritchie Service Complex (DPW&T)	✓
Glendale Service Complex (DPW&T)	✓
Brandywine Service Complex (DPW&T)	✓
Fleet Maintenance (OCS)	✓
Cheverly (Municipality)	✓
Riverdale Park	✓
Seat Pleasant	✓

DOE FACILITIES

ABANDONED VEHICLE IMPOUND LOT

Staff at the Abandoned Vehicle Impound Lot demonstrate good pollution prevention knowledge and regularly conduct good housekeeping procedures, facility inspections, and staff training. Facility staff are currently responsible for BMP maintenance and an additional training will be conducted to support their BMP maintenance program.

TABLE E8 ABANDON VEHICLE IMPOUND LOT – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0132	03-11-2003	Mark Jenkins Abandon Vehicle Section, DoE
Immediate Needs		
SWPPP: Update SWPPP to meet current facility practices and new Industrial Permit requirements. Stormwater Management: Extend drainage channel to the Police Department Auto Theft Lot to prevent excess erosion and sedimentation into the stormwater management facility. Good Housekeeping: Incorporate Good Housekeeping Practices into the Police Department Auto Theft Lot.		
2013 Achievements		
Good Housekeeping and Pollution Prevention: Inspection and housekeeping records are well documented. Waste Management: Proper storage and removal of used fluids. Stormwater Management: SWMF preventative maintenance inspection instituted, including regular mowing and visual inspections of channels. Staff Education & Training: Conducted facility-wide training.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

BROWN STATION ROAD SANITARY LANDFILL

The Landfill has accepted municipal waste since 1968. This year the Landfill staff is working closely with the SMD to improve the controls at the material stockpile area and to increase monitoring and maintenance of the ponds receiving runoff from the active cells.

TABLE E9 BROWN STATION ROAD SANITARY LANDFILL – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0401	04-07-2003	Roger Merritt, Associate Director, WMD, DoE
Immediate Needs		
SWPPP: Update SWPPP to meet current facility practices and new Industrial Permit requirements. Spill Prevention Control and Countermeasures (SPCC): Properly labeled spill kits. Include spill kit usage and location information in P2 training. Per SPCC Plan, provide containment around the gas pumps and heating oil tanks. Good Housekeeping/Pollution Prevention: Develop a timeline and design for a functionally appropriate BMP for vehicle/equipment wash area.		
2013 Achievements		
Record Keeping: Initiated monthly inspection documentation to include all ponds. Conducted inspections for Missouri Avenue Convenience Center. Initiated a SWPPP for the Missouri Avenue Convenience Center. Staff Training: Purchased staff training materials totaling $5,000. Materials Management Plan: Secured funding for the development of a sediment and erosion control plan for the material stockpile area. Record Keeping: Initiated separate inspection forms and procedures for Missouri Avenue Convenience Center. Stormwater Management: Oversight of activities to reduce sediment in 2 ponds from active cell drainage areas; MDE inspections reports are analyzed and necessary improvements are reported to the SMD monthly.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

MATERIALS RECYCLING FACILITY

The County's Materials Recycling Facility (MRF) is currently operated by Waste Management Inc. under their standards for environmental compliance. The facility uses Spanish and English language pollution prevention training materials.

TABLE E10 MATERIALS RECYCLING FACILITY (DoE FACILITY) – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0132	03-11-2003	Desmond Gladden, Contract Manager Recycling Team, Waste Management Division, DoE
Immediate Needs		
SWPPP: Update SWPPP to meet new Industrial Permit requirements. Good Housekeeping: Improve corrective action procedures in response to catch basin and inlet inspections.		
2013 Achievements		
Record Keeping: Good use of record keeping to track inlet cleaning and debris management. Staff Training: Developed an environmental staff training that included NPDES and SPCC. Good Housekeeping: Maintains a clean orderly facility.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

SANDY HILL CREATIVE DISPOSAL PROJECT

The Sandy Hill Landfill stopped accepting waste in 2000. The County continues to maintain the stormwater management facilities in compliance with the 2012 consent order. Monthly inspections of the facility are reviewed by the SMD.

TABLE E11 SANDY HILL CREATIVE DISPOSAL PROJECT (DoE FACILITY) – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0132	03-11-2003	Paula Burr, Administrative Specialist Project Management Section, WMD, DoE
Immediate Needs		
Stormwater Pollution Prevention Plan: Update SWPPP to meet current facility practices and new Industrial Permit requirements.		
2013 Achievements		
Stormwater Management: On-going pond maintenance.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

OCS FACILITY

PARK CENTRAL VEHICLE MAINTENANCE FACILITY

TABLE E12 PARK CENTRAL VEHICLE MAINTENANCE FACILITY (OCS Facility) – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0132	03-11-2003	Richard Hilmer, Fleet Administrator Facilities Operation and Management Division, OCS
Immediate Needs		
Stormwater Management: Partner with County agencies to ensure the proper maintenance and inspection of the off-site drainage area and SWMF.		
2013 Achievements		
SWPPP: Working with Total Environmental Concepts on SWPPP updates for 12-SW deadlines. Staff Education and Training: P2 training for all 30 staff members. Records kept on site. Stormwater Management: Regular inspections and debris removal from stormwater management facility. Requested funding of $17,550 for surface improvements to address excessive sheet flow erosion of yard. Spill Prevention Control and Countermeasures: Good documentation of leaks. Continued use of rekrete for spill cleanup. Use of absorbent booms for inlet protection. Stormwater Pollution Prevention Plan: Inspection and housekeeping records are well documented on appropriate SWPPP forms. Stenciled "Do Not Dump" on curb inlets.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

DPW&T FACILITIES

A proposal to develop new SWPPP's for DPW&T facilities was drafted in 2013. The new SWPPP's will focus on high risk areas which were previously identified in need of BMP improvements. The focus areas include: the vehicle and equipment washing area, material stockpiles and off site erosion. During the 2014 calendar year, DPW&T anticipates working

closely with the consultant in achieving greater control and to meet new regulatory controls under the 12-SW mandates.

TABLE E13 DPW&T FACILITY OVERVIEW			
DPW&T Facility Name	**Main Function(s)**	**Usage Duration**	**Activities**
Brandywine Facility	Material Storage/Services for North County	Year Round	Crew Dispatch for South County
Ritchie Service Complex	Snow Event Response Materials Storage Main Maintenance Depot	Year Round	Equipment Maintenance, Road Crew Dispatch, Materials Storage, OHM Headquarters
Glenn Dale Facility	Material Storage/Services for North County	Year Round	Crew Dispatch for North County

RITCHIE SERVICE COMPLEX

TABLE E14 RITCHIE SERVICE COMPLEX (DPW&T) – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0132	03-11-2003	Gwendolyn Clerkley, Associate Director, OHMD, DPW&T On-Site Compliance: Vernon Stinnett
Immediate Needs		
SWPPP: Continue work with the consultant URS in updating the SWPPP to address current facility practices and new Industrial Permit requirements. Stormwater Management: Improve documentation of the maintenance and inspection of the on-site BMPs, specifically the wash rack separator system for *TheBus*.		
2013 Achievements		
Staff Education and Training: P2 training for all DPW&T staff conducted in conjunction with the mandatory snow and ice control program training. Training included good housekeeping, spill prevention, vehicle fueling, materials management, and waste management. Training attendance records are maintained on-site. Material Storage: Good use of tarps throughout the yard for material stockpile and equipment storage. Over the past snow season, tarp covered stockpiled salt has been eliminated by mixing with road salting operations. Spill Prevention Control and Countermeasures: Assumed responsibility for SPCC plan development for fuel tanks to ensure site specific compliance. Good documentation of leaks and spills for heavy equipment such as graders, trailers, and rollers. Fueling and spill reporting procedures incorporated into *TheBus* contract documents. Good Housekeeping: Maintains a clean and orderly facility. Continues to maintain the trash management plan initiated in 2012. Conducts and documents regular site sweeping. Covered trash receptacles have been placed in highly visible and convenient locations through the facility. The design of a new wash bay, to replace the existing wash rack system, is in design. Record Keeping: Monthly facility inspections performed with follow-up actions as warranted.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

BRANDYWINE FACILITY

TABLE E15 BRANDYWINE FACILITY (DPW&T) – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0132	03-11-2003	Gwendolyn Clerkley, Associate Director, OHMD, DPW&T On-Site Compliance: Jay Dixon
Immediate Needs		
SWPPP: Continue work with URS to update SWPPP to meet recent facility stormwater management improvements and new Industrial Permit requirements. Material Storage: Material stockpile runoff collected by inlet 2. Recommendations for SWPPP update to include runoff diversion or exposure reduction. Recommend inlet protection as a temporary measure.		
2013 Achievements		
Good Housekeeping: Maintains a clean and facility and conducts regular housekeeping to reduce contamination from material stockpile area. See image Figure E3. Spill Prevention Control and Countermeasures: Well documented incident and response for leaks and spills from contractor dumping, broken oil line, and hydraulic leak. Record Keeping: Monthly facility inspections performed with follow-up actions as warranted. Staff Education and Training: Pollution Prevention (P2) training for all DPW&T staff conducted in conjunction with the mandatory snow and ice control program training. Training included good housekeeping, spill prevention, vehicle fueling, materials management, and waste management. Training attendance records are maintained at Ritchie Service Facility. Material Storage: Continued good use of inspection and housekeeping controls for P2 in the hazardous material area of vehicle maintenance shop.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

FIGURE E3
GOOD HOUSEKEEPING EFFORTS IN PLACE TO REDUCE OFF-SITE CONTAMINATION

GLENN DALE FACILITY

TABLE E16 GLENN DALE FACILITY (DPW&T) – 2013 Status		
Permit Number	**Permit Issuance Date**	**County Contact**
025W0132	03-11-2003	Gwendolyn Clerkley, Associate Director, OHMD, DPW&T On-Site Compliance: Clarence Waters
Immediate Needs		
SWPPP: Continue work with URS to update SWPPP to meet recent facility stormwater management improvements and new Industrial Permit requirements. Waste Management: Coordination needed for removal of leaking dumpsters on site.		
2013 Achievements		
Staff Education and Training: P2 training for all DPW&T staff conducted in conjunction with the mandatory snow and ice control program training. Training included good housekeeping, spill prevention, vehicle fueling, materials management, and waste management. Training attendance records are maintained at the Ritchie Service Facility. Stormwater Management: Well documented maintenance and regular debris removal from pipe on Northern Avenue across from the shop. Spill Prevention Control and Countermeasures: Good use of incident and response procedures for incident on 11/2012. Implemented new procedures in response to incident. Stormwater Pollution Prevention: The on-site drainage patterns, which discharge to an open channel, present a high risk to stormwater contamination. Frequent inspections and debris removal around the outfalls are now routinely conducted to reduce the potential for site flooding and runoff contamination.		
Long Term Planning		
Training: Expand facility training and inspections utilizing consultant staff.		

MUNICIPAL NPDES GENERAL INDUSTRIAL DISCHARGE PERMIT STATUS

During the 2013 reporting year, SMD staff reevaluated all municipal facilities and found that only 9 facilities conduct activities requiring Industrial Permit coverage. This change is due to outsourcing vehicle and equipment maintenance operations. Initially the County reported that 13 municipalities needed general permit coverage, (Reference: NPDES MS4 2009 Annual Report) but closer analysis has determined that neither the City of Glenarden nor the Town of Forest Heights perform activities that require permit coverage.

While SWPPP development, using the web based SWPPP tool, was under way for the City of Greenbelt and the City of Seat Pleasant, work was postponed in anticipation of contractual service assistance. Beginning in 2014, the SMD will engage KCI for services to include a deficiency SWPPP analysis and proposed BMPs to meet the 12-SW mandates for each municipality. The findings from KCI's analysis will provide more accurate finding that will be used in the web based SWPPP development program. It is also anticipated that the County will continue to engage a consultant to complete the programing of the web based SWPPP tool and update the program with the new requirements of the 12-SW.

TOWN OF CHEVERLY

TABLE E17 Town of Cheverly DPW – 2013 Status	
Permit Number	**County Contact**
02SW2139	Juan Lois Torres, Department of Public Works Director
Immediate Needs	
• Update SWPPP to meet 12-SW requirements. • Improve good housekeeping. • Improve record keeping. • Retrofit perimeter BMP controls. • Reduce risk from vehicle/equipment maintenance and storage. • Risk appropriate BMP for vehicle/equipment wash.	
2013 Achievements	
• Certified facility SWPPP for 02-SW Industrial Permit. • Staff training in April on SWPPP. • Areas for corrective action identified and presented to Town Administrator. • Reduced exposure of oil recycling center.	
Long Term Planning	
• Financing for the design and construction of needed BMPs. • Further training for staff. • Collaboration with adjacent property owners for BMP maintenance and installation.	

CITY OF COLLEGE PARK

TABLE E18 City of College Park DPW – 2013 Status	
Permit Number	**County Contact**
02SW2148	Steve Halpern, City Engineer
Immediate Needs	
• Develop SWPPP. • Improve record keeping. • Reduce exposure of oil recycling center.	
2013 Achievements	
• Good P2 knowledge.	
Long Term Planning	
• Develop BMPs for surface flow not captured by sanitary sewer.	

CITY OF DISTRICT HEIGHTS

TABLE E19 City of District Heights DPW – 2013 Status	
Permit Number	**County Contact**
02SW2141	Angela Barnhill-Love, Administrative Assistant
Immediate Needs	
• Develop SWPPP to meet 12-SW requirements. • Train facility staff. • Improve record keeping. • Reduce exposure of oil recycling center and material storage.	
2013 Achievements	
• Good P2 knowledge. • Management commitment to meeting Industrial Permit requirements. • Risk appropriate BMP for vehicle/equipment wash.	
Long Term Planning	
• Develop BMPs for surface flow. • Improve record keeping.	

CITY OF GREENBELT

TABLE E20 City of Greenbelt DPW – 2013 Status	
Permit Number	**County Contact**
02SW2145	Luisa Robles, Recycling Coordinator
Immediate Needs	
• Continue developing SWPPP to meet 12-SW requirements. • Train facility staff. • Improve record keeping. • Reduce exposure of oil recycling center and material storage.	
2013 Achievements	
• Good P2 knowledge. • Constructed rain gardens to treat run off per drainage areas. • Submitted an unsuccessful request for funding for compliant vehicle/equipment wash.	
Long Term Planning	
• Enhance perimeter swale and ensure all runoff is treated for P2.	

CITY OF HYATTSVILLE

TABLE E21 City of Hyattsville DPW – 2013 Status	
Permit Number	**County Contact**
02SW2150	Leslie Riddle, Public Works Director
Immediate Needs	
• Develop SWPPP to meet 12-SW requirements. • Train facility staff. • Improve record keeping. • Reduce exposure of oil recycling center and material storage.	
2013 Achievements	
• Good P2 knowledge.	
Long Term Planning	
• Develop BMPs for perimeter controls. • Develop BMPs for surface flow not captured by holding tank.	

CITY OF LAUREL

TABLE E22 City of Laurel DPW – 2013 Status	
Permit Number	**County Contact**
02SW1841	Antonius Hallmark, Project Inspector
Immediate Needs	
• Develop SWPPP to meet 12-SW requirements. • Train facility staff. • Improve record keeping. • Reduce exposure of oil recycling center. • Risk appropriate BMP for vehicle/equipment wash.	
2013 Achievements	
• Good P2 knowledge. • Regular inspections and maintenance of BMPs.	
Long Term Planning	
• Address restoration requirements of 12-SW.	

CITY OF NEW CARROLLTON

TABLE E23 City of New Carrollton DPW – 2013 Status	
Permit Number	**County Contact**
02SW2144	Bernard Cochran, Public Works Director
Immediate Needs	
• Develop SWPPP to meet 12-SW requirements. • Train facility staff. • Improve record keeping. • Reduce exposure of oil recycling center.	
2013 Achievements	
• New management with a commitment to P2.	
Long Term Planning	
• Address restoration requirements of 12-SW.	

TOWN OF RIVERDALE PARK

TABLE E24 Town of Riverdale Park DPW – 2013 Status	
Permit Number	**County Contact**
02SW2146	Leonard Addison, Public Works Director
Immediate Needs	
• Develop SWPPP to meet 12-SW requirements. • Reduce exposure of oil recycling center. • Improve record keeping.	
2013 Achievements	
• Good P2 knowledge. • Staff training in July on P2 and SWPPP development. • Awarded funding and installed rain garden to filter run off from equipment storage area.	
Long Term Planning	
• Continue developing perimeter controls.	

CITY OF SEAT PLEASANT

TABLE E25 City of Seat Pleasant DPW – 2013 Status	
Permit Number	**County Contact**
02SW2141	Johnny Thompson, Administrative Assistant
Immediate Needs	
• Continue developing SWPPP to meet 12-SW requirements. • Improve record keeping. • Repair grade inlet in yard. • Implement controls for contaminated run off from vehicle maintenance operations.	
2013 Achievements	
• Good P2 knowledge. • Conducted inventory and disposed unwanted items in material storage. • Began SWPPP development. • Management meetings to discuss funding options for yard repairs.	
Long Term Planning	
• Improve perimeter controls. • Reduce run on from adjacent properties.	

5. IMPLEMENTATION OF ROAD MAINTENANCE ACTIVITIES

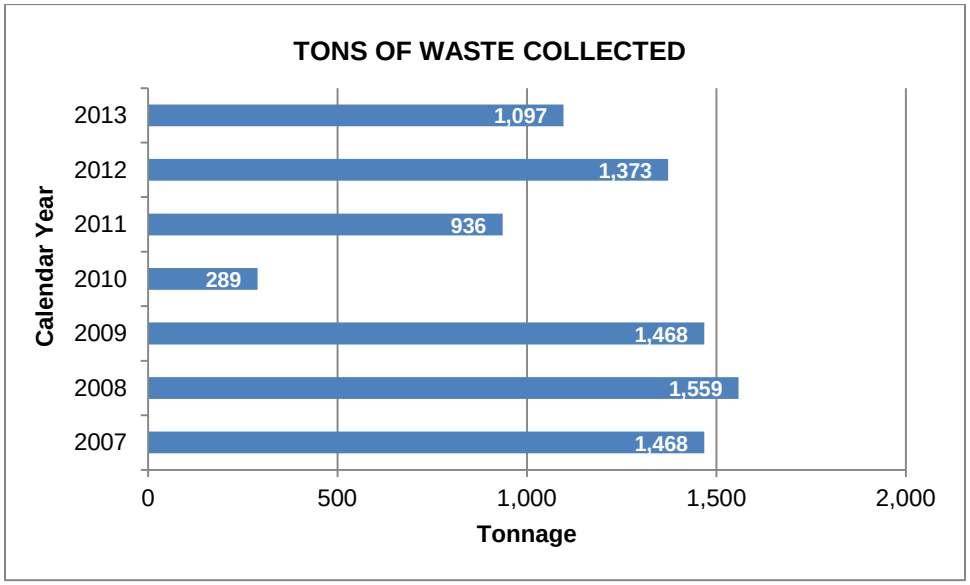
DPW&T's OHMD responsibilities include managing salt, sand, and calcium chloride applications to the County's roadways; and optimizing the amount necessary to effectively treat snow and ice while minimizing the impact of these materials upon the environment. Also, maintenance practices for unpaved shoulders, roadside vegetation management, and litter control have reduced the pollutant loads to waterways. Pollution prevention practices currently employed by DPW&T include street sweeping, litter control, inlet cleaning, and major channel cleaning.

STREET SWEEPING

The County's street sweeping operations were limited to selected arterial, collector, and industrial streets, with service to residential subdivision streets provided on a request only basis.

The street sweeping data collected for the arterial and industrial streets is recorded in four seasonal cycles, with 3 months of data recorded for each cycle. During the reporting period, 1,872.1 curb miles were swept collecting 1097.1 tons of debris. The street sweeping database for the 2013 reporting year is provided on DVD, Management Programs/Road Maintenance/ Street Sweeping.

FIGURE E4
STREET SWEEPING TONNAGE BY YEAR



The OHMD is in the process of evaluating the street sweeping program to improve program tracking, capture water quality efficiencies and report programmatic achievement for alternative BMP watershed restoration credit reporting. As the first step in the analysis, the roads serviced during this reporting period have been mapped on an overlay of the 8-digit watersheds, as shown in Figure E5. This information will be used to improve water quality efficiencies and potentially shift roads swept to more sensitive watersheds. Programmatic improvements also under consideration include the following:

- Consider servicing less roads and increasing the frequency in order to achieve full level of credit. MDE requires roadways swept a minimum of 2x per month for full credit. Currently we are servicing roads about once a month.
- Shift services roads to sensitive watersheds and the Anacostia to help address the Trash total maximum daily load (TMDL).
- Add additional roads swept in sensitive watersheds.
- Using ARCGIS, link all cycle data to the map and attribute table. This will improve documentation for NPDES reporting and eliminate double entry in a separate excel spreadsheet.

Recognizing that the street sweeping program's mission was not originally for NPDES MS4 water quality credit, a further analysis of the costs involved and the benefit derived for targeting the program needs to be fully evaluated.

FIGURE E5
ROADWAYS SERVED –COUNTYWIDE STREET SWEEPING PROGRAM

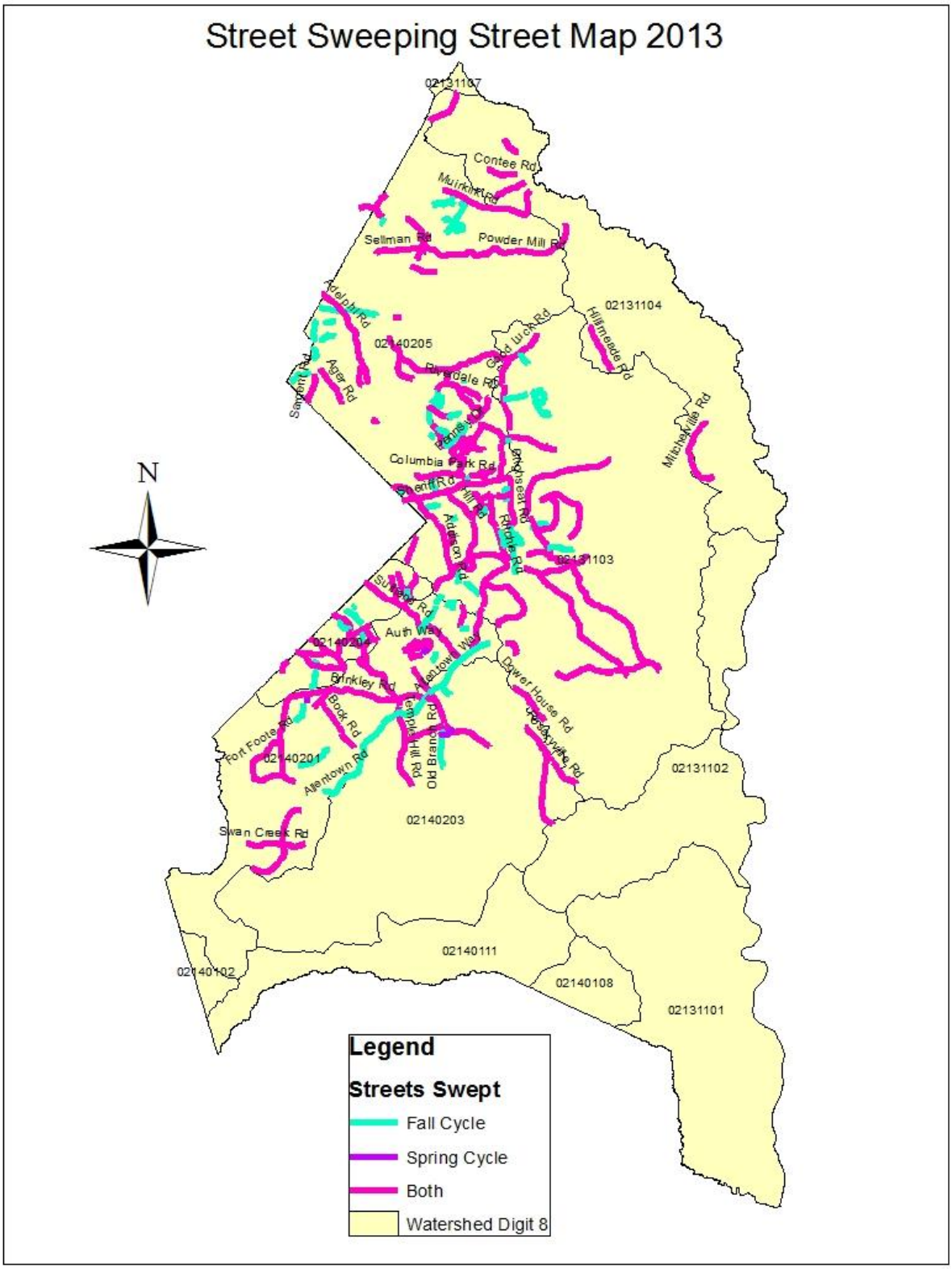


TABLE E26 DPW&T STORM DRAIN MAINTENANCE SERVICES PERFORMED (11/01/12-12/31/13)						
Community	**Start Date**	**Finish Date**	**No. SDS* Inspected**	**No. SDS* Cleaned**	**No. SDS* Repaired**	**LF of SD Lines**
Templeton Knolls	3/29/13	4/12/13	113	113	0	12,483
Ft. Washington Forest	4/15/13	4/16/13	170	170	0	11,416
Palmer Park (Phase 1)	4/19/13	5/02/13	258	258	0	21,556
Palmer Park (Phase 2)	5/03/13	5/08/13	135	135	0	13,596
Hillandale/Knollwood	5/08/13	5/13/13	206	206	0	20,408
Radiant Valley	5/15/13	5/29/13	186	186	0	17,639
West Laurel (Phase 1)	5/30/13	6/03/13	293	293	0	17,135
West Laurel (Phase 2)	6/03/13	6/12/13	206	206	0	17,135
Marlton (Phase 1)	6/12/13	6/20/13	244	244	0	21,296
Marlton (Phase 2)	6/20/13	7/17/13	309	309	0	33,833
Marlton (Phase 3)	7/17/13	8/06/13	353	353	0	30,984
Tantallon North	8/06/13	8/13/13	271	271	0	31,406
Carole Highlands	8/20/13	8/28/13	166	166	0	16,563
Chapel Oaks/Deanwood/ Beaver Heights	8/28/13	9/04/13	231	231	0	21,507
Riverdale Heights/ Crestwood/ Riverdale Hills	9/4/13	9/13/13	255	255	0	25,037
Kastle Estates	9/13/13	10/01/13	111	111	0	11,765
Wilburn Estates/ Rolling Ridge	10/01/13	10/11.13	162	162	0	12,540
Fort Washington Estates	8/14/13	8/20/13	59	59	0	6,662
Little Washington/ Westphalia Estates	unavailable	unavailable	42	42	0	3,085
Maplewood	10/15/13	10/22/13	118	118	0	12,537
Presley Manor	10/22/13	11/18/13	326	326	0	26,673
		TOTAL	**4,214**	**2,214**	**0**	**389,988**

***** *Storm Drain Structures*

STORM DRAIN MAINTENANCE: INLET, STORM DRAIN AND CHANNEL CLEANING

As a service to County residents, every storm drainage inlet located within the 21 communities served by the CCCP is inspected and cleaned. The inlet cleaning services that were completed during this reporting year are summarized in Table E26. Please note that Table E26 summarizes the actual services performed during the reporting year, which may not coincide with dates of service scheduled under the CCCP.

The SDMD is also responsible for major channel maintenance. There are 69 major channels which are inspected and cleaned/cleared on a three year cycle. In 2013, maintenance was performed on 23,396 linear feet of concrete channel and 15,281 linear feet of earthen channel. Three concrete channels are slated for rehabilitation. The design of the Owens Road

Channel commenced in 2013 and scoping was completed for the Wells Run in Riverdale Park and Claverton Blvd Channel in Beltsville.

UNPAVED SHOULDER MAINTENANCE

The OHMD administers road maintenance programs to eliminate standing water, enhance green space, and reduce herbicide usage. Roadside vegetation is primarily maintained mechanically with herbicide use restricted to the spraying sidewalk joint and monolithic concrete median areas. Litter crews utilize small equipment to cut the grass around guardrails, and roadside shoulders are mowed in a six-week cycle during the growing season (March 15-October 15). Limited herbicide applications have reduced the potential for distillates and toxins to migrate into the aquatic ecosystem. The mowing schedule for the 2013 reporting year is provided on DVD, Management Programs/Road Maintenance/Rural Roadside Mowing.

LITTER CONTROL

The County maintains an aggressive litter control and collection program along County maintained roadways. The litter service schedule is based on historical collection data, where the most highly littered roadways are serviced as often as 24 times per year. In general, major collector and arterial urban roadways are serviced weekly with rural roadsides served at least once per month. In 2013, the County received over 1,500 citizen requests for illegal dumping removal through the County's 311 system. Illegal dumping in the right-of-way is removed within five working days of notification. As a result of these efforts, approximately 2,398 tons of debris and solid waste was removed from County roadways during this reporting period. A Litter Control Operations Report and Illegal Dumping Report are provided on DVD, Management Programs/Road Maintenance/Roadside Litter.

In addition to storm drain inlet cleaning, the DPW&T also maintains automatic bar screen cleaners at four of its Anacostia Flood Control pumping stations. These devices have proven to be very effective in the removal of solid wastes from stormwater entering the stations. Based on monthly reports, 315 tons of debris was collectively removed from the Edmonston, Colmar Manor, Bladensburg, and Brentwood pumping stations in 2013.

In 2013, a decision was made to discontinue the end-of-pipe trash netting system at Flagstaff Street. A second end of pipe trash net system, located at Ray Road, was structurally damaged by high storm flows in 2009 and the system has not functioned since that time. Community concerns regarding the trash nets and the cost of the practice, as a function of its trash removal efficiency, lead to the decision by the County to discontinue the practice at the Flagstaff Street location.

During 2012, the Flagstaff Street trash nets were changed six times removing 16,901 pounds of debris at a cost of $13,086. The Anacostia Trash TMDL-Related Baseline Monitoring (June 2008-July 2009), prepared by the Metropolitan Washington Council of Governments (MWCOG) and submitted in the County's 2009 Annual report, concluded that the Flagstaff Street trash trap contents were 95% organic matter by weight. Based upon the monitoring results of the MWCOG study, the County estimated that of the 16,901 pounds of debris collected in 2012, only 845 pounds was trash, which equates to a cost per pound of just under $20 or $40,000 per ton.

SNOW AND ICE CONTROL PROGRAM

To determine when the application of de-icing materials is warranted, including pre-treatment applications, the Snow and Ice Removal Program depends heavily upon information from temperature probes, weather forecasts, Accuweather subscription service, and individuals monitoring the road conditions. Temperature probes embedded in the roadways gage pavement temperatures and provide key information used to determine an appropriate treatment for snow and ice control.

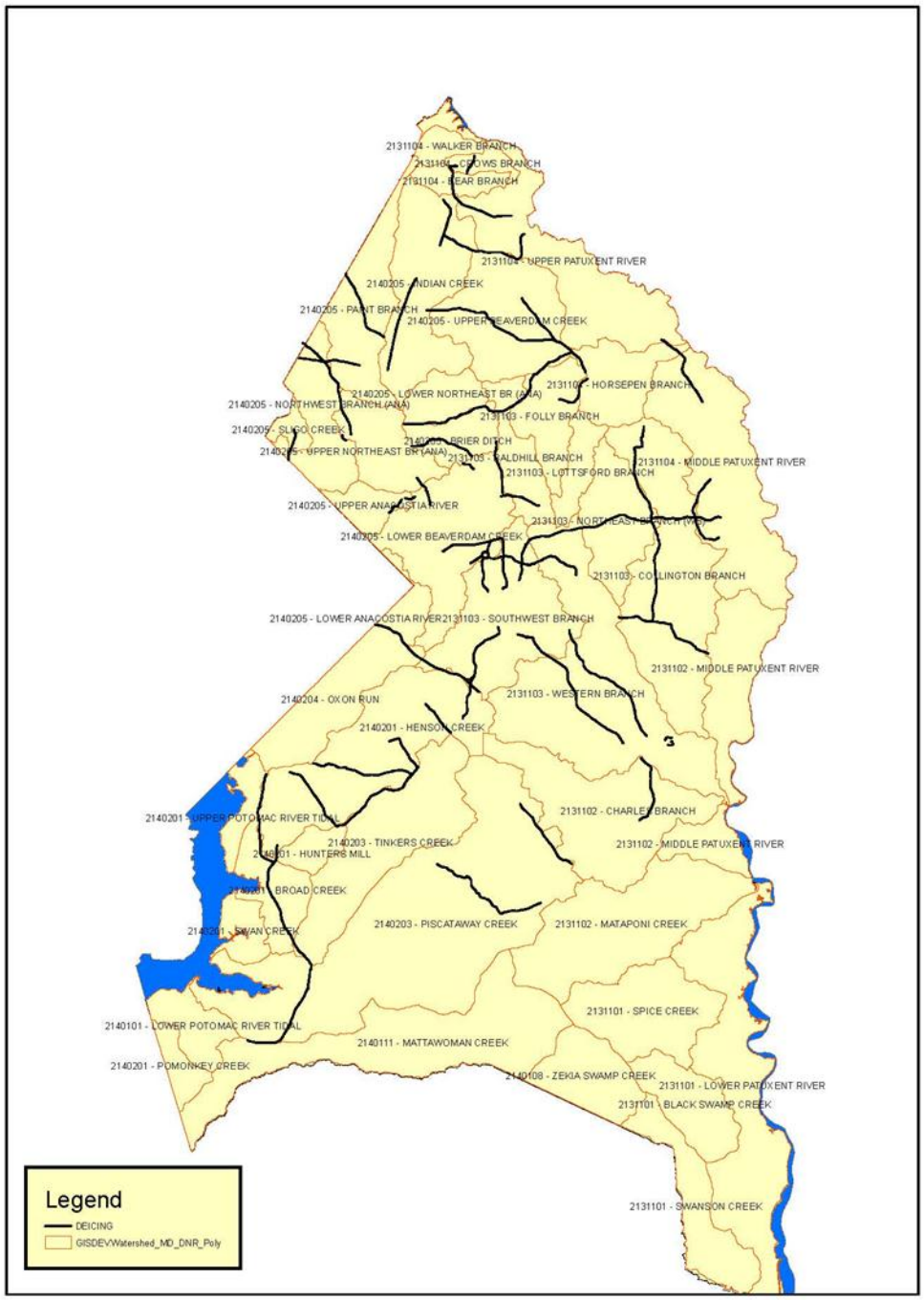
Salting and pretreatment application was utilized for 26 events with 18,952.25 tons of salt used at a cost of $1,050,513. Salt tonnage includes the 2012-2013 winter snow season and the 2013-2014 season through the end of December 2013. In an effort to reduce the amount of salting necessary to ensure safety to the traveling public during adverse conditions, pretreatment was extensively utilized. Figure E6 provides a graphic display of roadways in the deicing plan. OHMD plans to use this information as a tool to reevaluate where sensitive watersheds may warrant limited salt application.

DPW&T implemented the following operational activities to help manage and reduce salt application:

- Replacement of older equipment with newer, better functioning spreaders and hoppers.
- Eliminated long standing salt/sand stockpiles from the Ritchie Yard. While covered properly with a tarpaulin system, the EPA 2011 audit cited runoff emanating from the source. The removal of this pollutant source was identified as a goal in the NPDES Compliance Action Plan (CAP).
- Reinitiated a pretreatment de-icing program to help reduce salting application on arterial roadways.
- Continued training of equipment operators in the proper application and loading of salt.
- Plan for newer plow and spreading equipment acquisition including state-of-the-art calibration capabilities.

The County continues to reevaluate our salt management plan in an effort to reduce unnecessary salt application and spillage and to support this effort developed a "Prince Georges County Salt Application Management Plan" last year. Patterned after the Maryland State Highway Administration guidelines, the plan takes into consideration all aspects of salt management. A copy of the salt management plan is included with the County's on-site SWPPP documentation.

FIGURE E6
SNOW AND ICE CONTROL PROGRAM – DE-ICING APPLICATION MAP



6. PUBLIC EDUCATION

PUBLIC REPORTING

In 2013, the County phased out the use of the 95-CLEAN line as a tool for citizen illicit discharge reporting. The 95-CLEAN line now directs citizens to the Prince George's CountyClick 311 system. CountyClick 311 is Prince George's County's main source of government information and access to non-emergency services through a call center. Citizens may also utilize alternative forms of communication for lodging water quality complaints, such as through email or by direct call. More information regarding the investigation and enforcement actions taken to resolve water quality complaints is provided under the IDDE program, beginning on page E-7.

EDUCATION AND OUTREACH

DoE seeks every opportunity to promote environmental awareness, green initiatives, and community involvement to protect our natural resources and promote clean and healthy communities. As human behavior is a significant source of stormwater pollution, the County provides a vast array of volunteer opportunities and services to control pollutants at the source, prevent stormwater pollution, and restore watersheds. The County also integrates water quality outreach as a vital component of watershed restoration projects.

RAIN CHECK REBATE PROGRAM

Prince George's County is committed to improving the quality of life for its communities by promoting green solutions to stormwater runoff. The *Rain Check Rebate Program* allows property owners to receive rebates for installing Rain Check approved stormwater management practices. Homeowners, businesses, and nonprofit entities (including housing cooperatives and churches) can recoup some of the costs of installing practices covered by the program. DoE extensively promoted this new program in the fall of 2013 and conducted 6 workshops throughout the County, as summarized in Table E27.

TABLE E27
2013 RAIN CHECK REBATE WORKSHOPS

Date	Community	No. of Participants
10/03/2013	Laurel	130
10/09/2013	Accokeek	40
10/22/2013	Bladensburg	55
10/29/2013	Hillcrest Heights	25
11/05/2013	Capitol Heights	13
11/20/2013	College Park	35
	TOTAL	**298**

BEHAVIOR CHANGE CAMPAIGN IN THE LEWISDALE COMMUNITY IN THE NORTHWEST BRANCH SUBWATERSHED OF THE ANACOSTIA RIVER

Between June 2011 and July 2013, the Prince George's County DoE, in partnership with the Chesapeake Bay Trust (CBT) and the Maryland Department of Natural Resources (MD DNR), researched, designed, developed, implemented, and measured a community-based

social outreach campaign that sought to change residents' behavior(s) to reduce stormwater pollution.

"Score a goal, put your trash in the can," or "¡Haz un gol, ponga su basura en el basurero!", (Figure E7) was the selected theme of the targeted education and outreach campaign in Lane Manor Park, located in Adelphi. Comprehensive research, both primary and secondary, supported the targeting of Lewisdale Neighborhood Park visitors with an education based campaign that connects littering and its impact on the environment, park-goer experience, and public health. The campaign heavily focused on messaging using art to reach the predominantly first generation Latino community living in the neighborhood using this neighborhood park. Aimed at improving the use of existing trash cans, reducing floatable trash from a entering a tributary of the Anacostia River and reducing man hours needed to clean up the park system.

FIGURE E7
LANE MANOR PARK MURAL

The campaign pulled together a variety of Prince George's County agencies including the DoE, M-NCPPC Department of Parks and Recreation, and MWCOG to focus on reducing trash and litter left on the grass in one of the busiest parks in the M-NCPPC system.

Students, teachers, and families of the Lewisdale Elementary School community were on hand to design and paint colorful murals pledging to never litter and always put trash in the can. These murals were hung in the school courtyard and serve to reinforce the anti-litter message. Photographs of the event are provided in Figure E8.

FIGURE E8
LANE MANOR PARK EVENT

EVENTS

During the reporting year, DoE was the agency lead hosting 41environmental events and participated in an additional 62 events hosted by regional, local, and non-profit environmental and community organizations. In addition to our extensive environmental public participation programs, which are primarily targeted to the County's adult population, DoE is also committed to the environmental education of our youth. Last year environmental presentations were made to 13 schools. An overview of the outreach events and participants is provided in Table E28, with program specific DoE events listed in tables E27, E29, E32, E33, and E36.

TABLE E28 2013 DoE ACTIVITIES				
Activity/Event	**Type**	**Date**	**Host Agency**	**Number of Attendees**
Christmas Tree Recycling	Media	12/26/12 thru 02/01/13	DoE/RS	Not Applicable
Community Forklift	Presentation by Recycling Employees	01/09/2013	DoE/RS	25
KAB Paint Branch Elementary (Green Team Kickoff)	Green Team Kickoff by Recycling Employees	01/09/2013	DoE/RS	100+
MRF Filming Video	Presentation by Recycling Employees	01/10/2013	DoE/RS	3
KAB Conference	Presentation by Recycling Employees	01/28/2013 thru 01/31/2013	DoE/RS	300
KAB Green American Cleanup	Clean Up by Recycling Employees	02/05/2013	DoE/RS	100+
Cigarette Litter Prevention Program	Cigarette Litter Prevention by Recycling Employees	02/26/2013	DoE/RS	Not Available
KAB Great American Cleanup	Clean Up by Recycling Employees	02/27/2013	DoE/RS	100+
Behnke's Spring Showcase (Open House)	Presentations by DoE Employees	03/23/2013	DoE/ESD	300
Career Day (Buck Lodge Middle School)	Presentation by Recycling Employees	03/27/2013	DoE/RS	50
Potomac River Watershed Cleanup	Clean up and Presentations by DoE	04/06/2013	DoE/ESD	200+
Homeowners Association Meeting	Presentations by DoE Employees	04/09/2013	DoE/AMD	20+
Community Partners Meeting	Presentation by DoE, DPIE & DPW&T	04/10/2013	DoE	300
City of Hyattsville Parade and Festival	Presentations by DoE Employees	04/13/2013	DoE	500
Earth Day at Health and Human Services	Presentation by Recycling Employees	04/18/2013	DoE/RS	300+
Chesapeake Math and IT Academy	Earth Day Presentation	04/19/2013	DoE	100
John Hanson Montessori (Earth Day Celebration)	Presentations by DoE Employees	04/19/2013	DoE/ESD	800

TABLE E28, CONTINUED 2013 DoE ACTIVITIES				
Activity/Event	**Type**	**Date**	**Host Agency**	**Number of Attendees**
P3 Competition and National Sustainable Design Expo	Sustainability Exhibit and Presentations by DoE Employees	04/19/2013 and 04/20/2013	DoE	300
Anacostia Watershed Earth Day 2013 Cleanup Event	Clean up and Presentations by DoE	04/20/2013	DoE/ESD	15
Career Day (Glenarden Woods Elementary)	Presentation by Recycling Employees	04/22/2013	DoE/RS	200
Town Hall Meeting	Presentation by Recycling Employees	04/22/2013	DoE/RS	Not Available
Anacostia Watershed Society Earth Day Cleanup	Clean Up by Recycling Employees	04/24/2013	DoE/RS	75
Disposal of HHW (Home Goddard Space Flight Center)	Presentation by Recycling Employees	04/24/2013	DoE/RS	200
International Finance Cooperation	Presentation by Recycling Employees	04/24/2013	DoE/RS	30+
Charles Herbert Flowers High School (4-H Environmental Club)	Presentations by DoE Employees	04/25/2013	DoE	200+
Federal Triangle Earth Day Fair	DoE Exhibit and Presentation	04/25/2013	DoE	200
Health and Human Services Event	Presentation by Recycling Employees	04/25/2013	DoE/RS	50
National Institutes of Health	Presentations by DoE Employees	04/25/2013	DoE	800
Arbor Day	Plantings and Presentations by DoE	04/26/2013	DoE	10
Christmas in April	Clean up by DoE	04/27/2013	DoE	663
Mulch Giveaway Event	Mulch Giveaway Event by Recycling Employees	04/27/2013	DoE/RS	300
City of Seat Pleasant	DoE Exhibit and Presentations	05/04/2013	DoE	200
47th Legislative District Delegation Picnic	DoE Exhibit and Presentations	05/06/2013	DoE	100+
Children's Water Festival	DoE Exhibit and Presentations	05/08/2013	DoE	100
WSSC Children's Water Festival	DER Exhibit and Presentations by DoE	05/08/2013 and 05/09/2013	DoE/SID	200

TABLE E28, CONTINUED
2013 DoE ACTIVITIES

Activity/Event	Type	Date	Host Agency	Number of Attendees
Marlborough Day	DoE Exhibit and Presentations	05/11/2013	DoE	40
Town Hall Meeting	Presentations by DoE Employees	05/15/2013	DoE/AMD	300
Mount Rainier Day	DoE Exhibit and Presentations	05/18/2013	DoE	120
Corkran United Methodist Church	Recycling	5/28/2013	DoE/RS	65
Bowiefest	DoE Exhibit and Presentations	06/01/2013	DoE	150
Buy Prince George's Housing Fair	Exhibit and Presentation	06/01/2013	DoE	10
Project Management Course (University of Maryland, Baltimore)	Recycling Employees	06/04/2013 thru 06/07/2013	DoE/RS	60
NBC4 Shredding Event	Shredding Event Conducted by DoE Employees	06/14/2013	DoE/WMD	24
Maryland Recycling Network/SWANA Conference	Recycling Employees	06/20/2013 thru 06/22/2013	DoE/RS	16
Avondale/North Woodridge Community Day	DoE Exhibit and Presentations	06/22/2013	DoE	20
Thingamagig Convention	Presentation by Recycling Employees	07/25/2013	DoE/RS	200
2nd Annual District 9 Family and Friends Day	DoE Exhibit and Presentations by DoE	07/29/2013	DoE	200
Beltway Church of Christ Community (Health and Wellness Day)	DoE Exhibit and Presentations	08/03/2013	DoE	50
National Night Out	DoE Exhibit and Presentations	08/06/2013	DoE	200
National Night Out	DoE Exhibit and Presentations	08/06/2013	DoE	18
Fort Washington Community Family Day	Presentations by DoE Employees	08/24/2013	DoE/SID	400
District 26 Community Family Fun Day	DoE Exhibit and Presentations	08/24/2013	DoE/SID	300
Greenbelt Festival	Presentations by DoE Employees (Rain Check Rebate Program)	09/01/2013	DoE/SID	75
Community Partners Meeting	Presentation by DoE, DPIE and DPW&T	09/05/2013	DoE	50+

TABLE E28, CONTINUED
2013 DoE ACTIVITIES

Activity/Event	Type	Date	Host Agency	Number of Attendees
County Fair	DoE Exhibit and Presentations	09/06/2013 thru 09/08/2013	DoE/RS, SID	1,700+
Senior Fun and Fitness	DoE Exhibit and Presentations	09/13/2013	DoE	Not Available
New Carrollton Community Day	DoE Exhibit and Presentations	09/13/2013	DoE	100
Hispanic Festival	DoE Exhibit and Presentations	09/15/2013	DoE	1,500
Port Towns Day	DoE Exhibit and Presentations (Enviroscape® and Rain Check Rebate Program)	09/21/2013	DoE/SID	2,550
WSSC Campfire	Presentations by DoE Employees	09/28/2013	DoE/SID	240
Fall Emergency Preparedness Conference	DoE Exhibit and Presentations	09/28/2013	DoE	150
Laurel Riverfest 2013	DoE Exhibit and Presentations	09/28/2013	DoE	100
6th Annual Prince George's County Community Association Conference	DoE Exhibit and Presentations	10/05/2013	DoE	35
SWAC Tour	Presentation by Recycling Employees	10/11/2013	DoE/RS	150
6th Annual PG Community Association Conference Day	Presentations by DoE Employees (Rain Check Rebate Program)	10/05/2013	DoE/SID	40
Infiltration by Design: Permeable Interlocking Concrete Pavement	Presentations by University of Maryland	10/14/2013	DoE/SID	70
EPA Tour	Presentation by Recycling Employees	10/16/2013	DoE/RS	18
MRF Tour	Presentation by Recycling Employees	10/17/2013	DoE/RS	300
Alice Ferguson Foundation Trash Summit	Recycling Employees	10/18/2013	DoE/RS	300
Clean Up, Green Up Prince George's County	Clean up and Presentations by DoE	10/19/2013	DoE	150

TABLE E28, CONTINUED
2013 DoE ACTIVITIES

Activity/Event	Type	Date	Host Agency	Number of Attendees
Stream Ecology: William S. Schmidt Outdoor Educational Center	Citizen Presentation/ DoE Rain Check Rebate Program Materials Provided	10/28/2013	DoE/SID	5
Recycling Presentation	Presentation by Recycling Employees	10/29/2013	DoE/RS	75
Career Day (Arrowhead Elementary School)	Presentations by DER Employees	11/2013	DoE	45
WSSC Calendar Contest	Participation by DoE Employees	11/07/2013	DoE/SID	Not Available
America Recycles Day	Media Event	11/13/2013	DoE/RS	Not Applicable
2013 Prince George's County Supplier Development and Diversity Division Business Conference and Expo	Presentations by DoE Employees (Rain Check Rebate Program)	11/14/2013	DoE/SID	60
Turning a New Leaf Conference	Presentations by DoE Employees	11/15/2013	DoE/SID	217
TNI Open House	Presentations by DoE Employees	11/20/2013	DoE	100
Jocelyn D. Harris HOA	Presentations by DoE Employees (Rain Check Rebate Program)	11/21/2013	DoE/SID	15
EPA Green Infrastructure	Participation and Presentation by DoE Employees (Rain Check Rebate Program)	11/21/2013	DoE/SID	65
MDE Sculpture Contest	Presentation by Recycling Employees	11/22/2013	DoE/RS	69
Tire Recycling Amnesty Day	Conducted by Recycling Employees	11/24/2013	DoE/RS	235
Master Gardener Training	Presentations by DoE Employees	12/04/2013	DoE/SID	23
Community Partners Meeting	Presentation by DoE, DPIE & DPW&T	12/05/2013	DoE	20
TNI Town Hall Meeting (Langley Park)	Presentations by DoE Employees	12/11/2013	DoE/SID	12

TABLE E28, CONTINUED 2013 DoE ACTIVITIES				
Activity/Event	**Type**	**Date**	**Host Agency**	**Number of Attendees**
MDE Stormwater Innovation Tour (Permeable Pavement)	Presentations by DoE Employees	12/11/2013	DoE/SID	8
Recycling Presentation (Tall Oaks High School)	Presentation by Recycling Employees	12/11/2013	DoE/RS	800
CEJSC Environmental Justice	Presentations by DoE Employees	12/17/2013	DoE/SID	14
Can the Grease Calendar Reception	Presentations by DoE Employees	12/17/2013	DoE/SID	Not Available
Greater 202 Coalition Meeting	Presentations by DER Employees	Monthly	DoE	100
			GRAND TOTAL	18,405

WATER CONSERVATION

As the public water supply utility for Prince George's County, the WSSC is lead agency tasked with educating the general public on water conservation issues. A major focus of WSSC's outreach campaigns is to promote pollution prevention as a means to protect our regional drinking water reservoirs. An overview of WSSC's outreach events follows, with a complete listing of community events, tours, and programs is available for viewing at: www.wsscwater.com/home/jsp/content/community-outreach.faces.

INVASIVE SPECIES REMOVAL

On August 29, 2013, over one hundred University of Maryland students gathered to remove the invasive vine kudzu that grows along the Patuxent River in North Laurel. Kudzu is a fast-growing vine that smothers trees and shrubs along this riparian buffers planted by WSSC. The students and WSSC have been working on battling the kudzu for three consecutive years and have recorded a notable decline in kudzu. New trees and shrubs have begun to sprout providing food and shelter for birds and other wildlife.

PLANT A TREE, PROTECT YOUR WATER!

This tree planting event sought to create and enhance riparian forest buffers along the Patuxent River in Laurel, Maryland. Together, local high school and University of Maryland students, volunteers, and WSSC employees planted 50 serviceberries, 50 eastern redbuds, 50 alders, and 50 swamp white oaks on the banks of the Patuxent River. These particular species were selected "for their value in not only stopping erosion, but also creating habitat for birds and other wildlife."

RIVER CLEANUPS

WSSC participates in the Patuxent, Potomac and Anacostia River cleanups, pulling trash and debris from the rivers at numerous locations throughout the watershed. WSSC works hard to keep the Potomac River and the two reservoirs on the Patuxent River clean because they are the sources of drinking water for their customers. The Anacostia River receives the majority of clean wastewater coming from WSSC. All three rivers are important to WSSC because the work they do to help keep these watersheds clean is good for the environment, and means less treatment required to produce the safe, clean water that comes out of the tap.

FAMILY CAMPFIRE AND WATERSHED FAIR

Presented by WSSC on behalf of the Patuxent Reservoirs Watershed Protection Group, the Family Campfire and Watershed Fair took place on September 28, 2013 at WSSC Headquarters and promoted the message of protecting our water supply. Entertainer Billy B., who sings and dances to educate children about the environment, performed at this year's festival. The event featured games, activities, and exhibits highlighting how we can protect our watershed.

ANNUAL CHILDREN'S WATER FESTIVAL

The annual Children's Water Festival took place on Wednesday, May 8 and Thursday, May 9, 2013. More than 400 fourth graders from 3 Prince George's and 2 Montgomery County schools participated in hands-on learning about water, wetlands, human health, and aquatic life.

The festival coincides with "National Drinking Water Week" which provided the students with another opportunity to learn about life's most precious resource – water.

WSSC BACKS SAFE DISPOSAL OF PRESCRIPTION DRUGS

WSSC supports the Drug Enforcement Administration's Prescription Drug Take-Back Day on October 26, 2013 by urging its customers to drop-off old or unused medication at local police stations in Prince George's County. When medications are disposed of improperly – by washing them down the toilet or drain – they can end up in our streams and rivers where they cause ecological damage.

"CAN THE GREASE" CALENDAR CONTEST

The theme of this year's contest was "Can the Grease." Using mixed media, elementary school artists depicted why it is important to can, cool, and throw grease in the trash. The "Can the Grease" initiative reminds customers that pouring Fats, Oils, and Grease (FOGs) down the drain is a major cause of sanitary sewer clogs and backups into homes, communities, and waterways. Each calendar month features the work of one of twelve winners selected, six of which were from Prince George's County.

PRINCE GEORGE'S COUNTY "KIDS FOR SCIENCE" STEM FAIR

WSSC sponsored the award for environmental entries at the Prince George's County "Kids for Science" STEM Fair held at Robert Goddard Montessori School in Seabrook, Maryland on May 8, 2013. The fair was a competitive event that promoted an interest in science, technology, engineering, and mathematics and showcased young scientists in Prince George's County. The winning entry focused on the level of phosphates contained in biodegradable versus non-biodegradable soap.

STORMWATER MANAGEMENT FACILITY MAINTENANCE

PILOT POND COMMUNITY PROGRAM

The Office of Project Management (OPM) DPW&T is working in a partnership with the Neighborhood Design Center (NDC) and residential communities in a pilot pond community program. DPW&T is responsible for all publicly-owned SWMFs with storm drain maintenance being the Departments largest operational function. Recognizing the opportunity to leverage limited resources and improve the overall management of the County ponds, DPW&T developed a Pilot Pond Community Program with several communities. The program addresses the limited functionality and poor aesthetics of our older ponds and works to improve water quality and make publicly-maintained SWMFs more of a community amenity. The key points of the program are:

- DPW&T would perform a detailed inspection of the existing facility and perform all required functional improvements to bring the facility to design standards and, as part of the program, retain this responsibility.
- DPW&T would provide a Landscape Architect to work with the community to develop an aesthetically pleasing and technically compliant plan to improve the pond and aesthetics of the surrounding area.
- DPW&T would both contract for and pay for these aesthetic improvements.

- Community would execute a binding agreement/memorandum of understanding (MOU) with the County to perform all non-functional maintenance on the pond to include grass cutting, trash and litter pick up, as well as maintenance of all installed landscaping, hardscaping, or street furniture.

This program was started in 2010. The NDC continued to assist DPW&T in resolving common landscaping problems around SWMFs including removing of invasive plants, clearing of outfall debris, and addressing of algal blooms. In 2013, the NDC provided 6 design renderings for interested participants, gave 2 homeowner association (HOA) presentations and established 2 new community partnerships. To date, under the "Pilot Pond Program", DPW&T engineers and NDC staff have evaluated 28 ponds. Work was completed for 4 ponds this year bringing the 3 year completion total to 20.

BMP INSPECTION PROGRAM FOR PRIVATE SWMF

The County is cognizant that the successful implementation of the Preventative Maintenance Inspection Program requires extensive outreach to the regulated community, as property owners may be unaware of the legal responsibility for BMP inspection andmaintenance. Program outreach materials, including the *Your Business Connection to the Bay: Simple Steps to Protect Our Waterways*, accompany all pre-inspection notification letters. One-to-one outreach is also conducted with property owners or their representative during the inspection process. To further emphasize the need for compliance, the County provides property owners and on-site managers with a written assessment of the inspection results and a compliance schedule.

HOUSEHOLD HAZARDOUS WASTE

The *Household Hazardous Waste and Electronics Recycling* brochure promotes the proper disposal of chemicals and hazardous waste and eCycling opportunities available to County residents. The brochure, both in English and Spanish, stresses the importance of safe disposal of hazardous waste and opportunities for recycling unwanted electronic devices. The County maintains a permanent Household Hazardous Waste Acceptance Site, open and free-of-charge to County residents, at the Brown Station Road Sanitary Landfill (BSR) in Upper Marlboro. The County contracts with Care Environmental Corporation, a licensed hazardous waste disposal company, to ensure the proper handling and disposal of all hazardous materials collected at the site. Additionally, the County continues to provide a "front door" waste pickup service option for elderly or disabled residents who qualify for this free service. Approximately 9,369 vehicles dropped off hazardous and electronic waste this reporting year. A summary of the materials collected are listed below:

- 196.28 tons of electronics;
- 112,398 gallons of liquid household hazardous waste; and
- 52.45 tons of solid household hazardous waste.

LAWN CARE AND LANDSCAPE MANAGEMENT

PRINCE GEORGE'S MASTER GARDENERS PROGRAM

The Maryland Master Gardener Program was started in 1978 as a means of extending the horticultural and pest management expertise of University of Maryland Extension Service (UMES) to the general public. The program is designed to train volunteer horticultural educators

for UMES – the principal outreach education unit of the University of Maryland (UM). Participants receive 40-50 hours of basic training from UM professionals in return for volunteering within their community, teaching Marylanders how to manage sustainable landscapes.

Prince George's Master Gardeners are a part of the Maryland Bay-Wise Program offered by the UMES. This program promotes better water quality through smarter gardening. The County's Master Gardeners teach citizens and residents ways to decrease the amount of toxins, nutrients, and sediments that flow with stormwater into our streams that lead to the Chesapeake Bay. Prince George's County recognizes and demonstrates the importance of this program by funding the Master Gardener Coordinator's position at UMES. The talents and skills of the Master Gardener Coordinator was used to instruct new recruits, coordinate and lead workshops and plant clinic classes, and coordinate and lead community education and outreach programs. A list of the lectures and workshops related to stormwater management and water quality are shown in Table E29.

TABLE E29
2013 MASTER GARDENER ACTIVITIES

The Water Cycle **(Terrarium Workshops)**	**Date**	**Number of Participants**
Baden Library	June 19	30
Greenbelt Library	June 29	20
Hillcrest Heights Library	September 4	21
Largo-Kettering Library	April 20	17
New Carrollton Library	April 24	18
South Bowie Library	June 29	15
Surratts-Clinton Library	June 8	12
	TOTAL	**133**
The Benefits of Trees **(Leaf Rubbing Workshops)**	**Date**	**Number of Participants**
Baden Library	September 30	20
Greenbelt Library	June 22	15
Hillcrest Heights Library	September 18	5
Hyattsville Library	September 28	10
New Carrollton Library	September 14	10
South Bowie Library	September 21	5
	TOTAL	65
BayWise **Yard Certifications**	**Date**	**Number of Participants**
Greenbelt Community Center	May 22	4
Resident in Berwyn Heights	May 11	5
Resident in Bowie	June 8	4
Resident in Clinton	June 22	4
Resident in Colmar Manor	August 10	4
Resident in Upper Marlboro	August 10	3
Schrom Hills Park Garden, Greenbelt	May 22	3
Spring Hills Park Garden, Greenbelt	May 22	5
	TOTAL	**32**

TABLE E29, CONTINUED 2013 MASTER GARDENER ACTIVITIES		
Other Activities and Events	**Date**	**Number of Participants**
Arbor Day Adelphi Elementary School	April 26	35
BayWise Training of Master Gardener Interns	April 22	30
Bowie Green Expo (*BayWise* Display)	April 13	50
College Park Community Center	November 20	30
County Fair (*BayWise* Display, *Rain Check Rebate Program*, Rain Gardens, Rain Barrels)	September 6-9	40
Green Man Festival, Greenbelt	May 11	50
Gwendolyn Britt Senior Center, Hyattsville (Rain Gardens, Native Plantings Used to Control the Flow of Water)	April 10	23
Gwendolyn Britt Senior Center, Hyattsville (Rain Gardens, Native Plantings Used to Control the Flow of Stormwater, *The Water Cycle* [Terrarium Workshop])	June 12	16
Hillcrest Heights Community Center (*Rain Check Rebate Program*)	October 29	25
Langley Park Senior Activity Center (Native Plantings Used to Control the Flow of Stormwater, *The Water Cycle* [Terrarium Workshop])	July 17	14
M-NCPPC Sports and Learning Complex, Summer Youth Camp (Native Plantings Used to Control the Flow of Stormwater, *The Water Cycle* [Terrarium Workshop])	June 21 & August 9	50
Rain Barrel Workshop	May 18	10
Town of Capitol Heights, Seniors Program (*The Water Cycle* [Terrarium Workshop], Rain Garden Design)	March 21	12
William H. Schmidt Outdoor Educational Center (Native Plantings Used to Control Erosion on the Nature Trails)	March 29	3
YMCA Thingamajig (*The Water Cycle* [Terrarium Workshop])	July 25	600
	TOTAL	**988**

EDIBLE DEMONSTRATION GARDEN AT PRINCE GEORGE'S DPW&T D'ARCY ROAD FACILITY

The Edible Demonstration Garden located at the DPW&T D'Arcy Road Facility provides County employees and local residents contact with nature. The natural setting of the garden is ideal for environmental education and horticulture programs whose goals are to demonstrate that an edible landscape is sustainable, affordable, and productive.

The 'edible garden,' sometimes referred to as a learning landscape, uses Bay-Wise landscaping practices that focus on water quality. As gardeners we can contribute to a cleaner local waterway by adhering to the following environmentally-sound landscaping approaches:

- Feed the soil and fertilize wisely
- Water efficiently
- Plant wisely
- Recycle yard waste
- Manage garden pests with Integrated Pest Management (IPM)
- Protect the soil with mulch or cover crops
- Control stormwater runoff

NEIGHBORHOOD DESIGN CENTER

The NDC, a local non-profit located in Riverdale, is an important partner in many County initiatives. They furnish pro-bono design and planning services to a wide variety of individuals, organizations, and low-to-moderate income communities. Their goal is to involve the entire community in the development and implementation of initiatives and projects designed to revitalize neighborhoods. NDC develops plans for parks, playgrounds, gardens, and community plantings, including wetland and rain gardens, reforestation projects, and median and shade tree plantings. Collectively, these efforts have increased the County's green space, reduced stormwater runoff, and improved water quality through the creation of natural systems to cleanse stormwater runoff. Table E30 summarizes the major partnership projects completed during this reporting year.

TABLE E30 2013 NDC LANDSCAPE DESIGN ASSISTANCE
Prince George's County: Suitland Residential Façade Program NDC was approached by the Redevelopment Authority to help promote a Residential Façade Program in Suitland, Maryland; the program involves enhancing neighborhoods and streetscapes by offering homeowners grant funding for façade and landscape improvements (many of the homeowners were previously unable to make improvements due to lack of resources); NDC provided renderings of, and cost estimates for, potential home improvements, i.e., new windows and doors, siding replacement, brick painting, shutters, awnings, porches and more.
Prince George's County: *Clean Up, Green Up* NDC provides schools, neighborhood groups, and municipalities with the landscaping plans for the *Clean Up, Green Up* beautification effort which focuses on guiding, supporting, and assisting residents and businesses in the creation and implementation of planting projects that create a healthy and safe environment and promote sustainable communities throughout the county; NDC rendered 56 planting designs and assisted 79 groups (68 groups implemented planned projects) this reporting year.
Prince George's County: Arbor Day Planting NDC provided the landscaping plans for the Arbor Day Celebration held at Adelphi Elementary School in Adelphi, Maryland.
Prince George's County: Department of Public Works and Transportation (Stormwater Ponds) NDC works with community, civic, and homeowner associations to promote DPW&Ts Stormwater Pond Retrofit and Beautification Program which addresses pond improvements and aesthetics; DPW&T performs functional maintenance on ponds and NDC designs aesthetically-pleasing landscaping plans for the ponds; in exchange, the associations take on the responsibility of landscape maintenance and agree to contact the county for any functional maintenance required; NDC rendered 6 designs, delivered 2 presentations, and established 2 community partnerships this reporting year.
Prince George's County Public Schools System: Gaywood Elementary School NDC created a series of outdoor classroom renderings for the school courtyard; phase one of the project was the execution of a rain garden and rain water conveyance sculpture, staff and volunteers installed over 60 plants.
Prince George's County: Department of Public Works and Transportation (*Right Tree, Right Place Program* [Bradford Pear Tree Replacement Program]) The *Right Tree, Right Place Program* is a risk management program developed to systematically remove and replace dead, dying, and high risk street trees in the county many of which were Bradford Pears; NDC provided community outreach to homeowners throughout the county who were passionate about the Bradford Pear, a non-native and invasive tree (first thought to be an asset) develops disease and/or structural issues at about age twenty; NDC works to educate citizens on the negative effects the trees have on the community, and to replace the Bradford Pear with native and non-invasive trees such as Eastern Redbud or Willow Oak (see Figure E8 for trees replaced within TNI areas, and Table E31 for number of trees planted by district).

FIGURE E9
***RIGHT TREE, RIGHT PLACE PROGRAM* PROJECT AREAS**

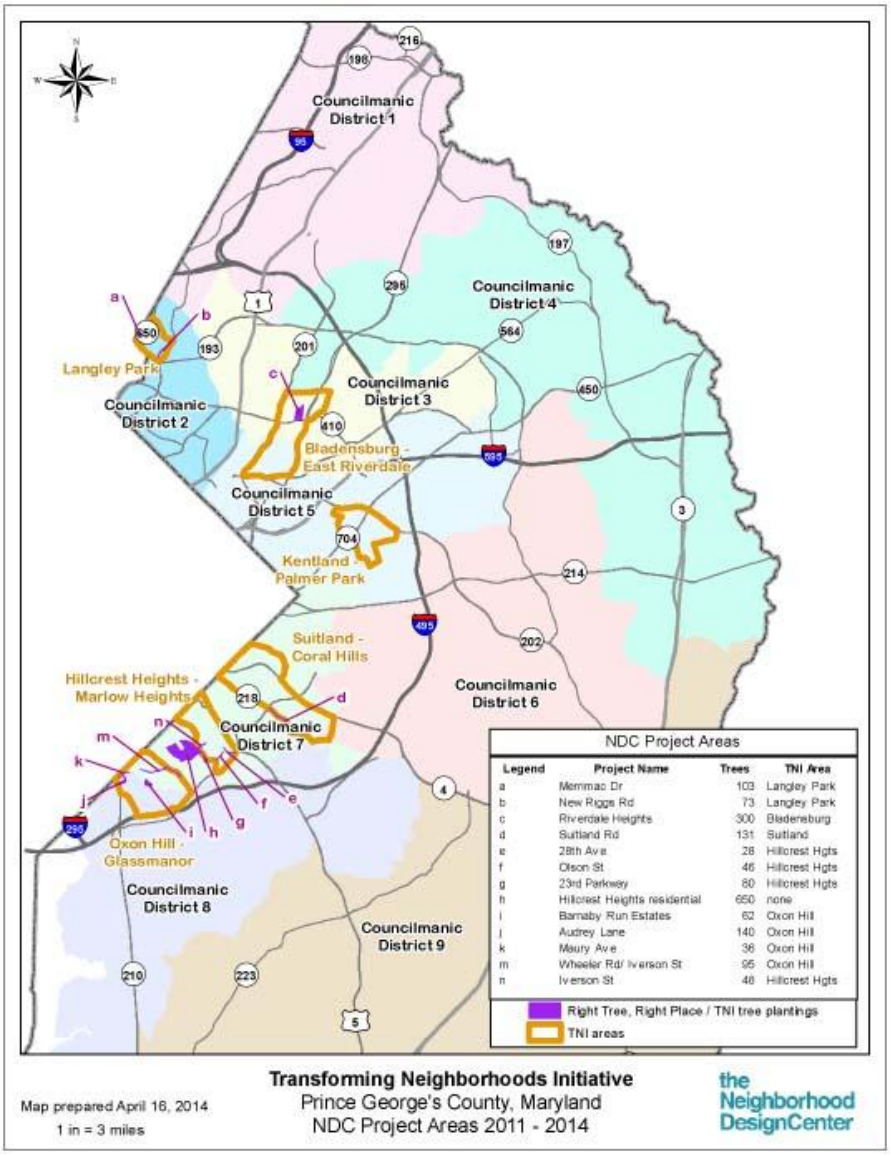


TABLE E31 ***Right Tree, Right Place Program* TREES REPLACED (06/11-04/14 INCLUDES TNI AREAS)**	
Councilmanic District	**Trees Planted**
District 1	1908
District 2	2661
District 3	1535
District 4	510
District 5	1541
District 6	1708
District 7	1254
District 8	1577
District 9	2130
TOTAL	**14,824**

ARBOR DAY

The annual Prince George's County Arbor Day celebration was held on April 26, 2013 at Adelphi Elementary School in Adelphi. During the celebration, the Honorable Rushern L. Baker, III, County Executive, accepted the County's 29th consecutive Tree City USA Award on behalf of Prince George's County. Horace Henry, Southern Region Urban and Community Forestry Coordinator, MD DNR, presented the Award to the County Executive.

After the presentation ceremony, the ceremonial Arbor Day tree was planted by invited dignitaries and honored guests. The Prince George's County Beautification Committee, staff from DoE, DPW&T, OCS, MD DNR Forest Service, M-NCPPC, NDC, PGSCD, and Prince George's County Public Schools (PGCPS) helped each class plant their own tree. In celebration of environmental stewardship the students planted 24 trees, with each classroom planting a class tree.

FIGURE E10
ARBOR DAY PLANTING DETAIL
(PROVIDED BY NDC)

PRINCE GEORGE'S BEAUTIFICATION COMMITTEE

This year marked the 43rd anniversary of the Prince George's County Beautification Committee, an all-volunteer organization dedicated to honoring the landscaping efforts of those in the community who make a difference. The annual Beautification Awards Ceremony recognizes excellence in gardening and landscape design. Entries are judged using the National Garden Clubs, Inc. Standards for Evaluating Landscape Design, rating on first impression, suitability of design to purpose, design, implementation, sustained maintenance, and final impression. This year the Committee recognized over 66 individuals and organizations during an event held at the Newton White Mansion.

TREE REPLACEMENT PROGRAM

The Special Services Division (SSD) of DPW&T is charged with maintaining the County's street trees with licensed tree care experts' on-staff. Since June 1995, the program has used volunteers to replace over 32,850 trees lost through death or disease. More recently, the County has implemented a Pilot Bradford Pear Replacement Program to systematically replace existing Bradford Pears with hardier species of trees, selected for their tolerance of urban conditions. Once planted freely throughout the County and recognized as the official County tree, the Bradford Pear has become a safety hazard in the road right of way, as they tend to be short lived and lose major branches during storm events. To date, 2,183 dead dying or at risk trees have been removed and 10,124 new trees planted.

Realizing that many homeowners are passionate about the Bradford Pear, even those that are damaged and misshapen, the County has partnered with the NDC to provide community outreach and promote a smooth removal and replacement process. NDC staff held 15 community meetings this year to describe the program and answer any questions.

LITTER CONTROL, RECYCLING, AND COMPOSTING

LITTER CONTROL

Clean Up, Green Up Initiative

County Executive Rushern Baker's *Clean Up, Green Up* Initiative is a program designed to improve the quality of life in Prince George's County. Staff from various agencies, under the direction of the County Executive, partnered with communities, municipalities, and schools to cleanup roadside litter and coordinate tree, shrub, and bulb plantings. The focus of the event was to enhance the natural environment of the County by maintaining existing landscaping, as well as planting additional materials in public spaces. In partnership with DPW&T, the NDC staff developed landscape plans for 56 groups participating in the "greening" program. Many neighborhood organizations participated in this event and took advantage of the opportunity to replace street trees that were missing due to storm damage. During the third annual Countywide *Clean Up, Green Up* event, held on October 19, 2013, over 3,700 Prince Georgians collected 19 tons of roadside litter and planted over 2,800 trees and shrubs, 4,500 flowering perennials and ornamental grasses, and 20,000 flowering bulbs at 191 locations throughout the County.

Storm Drain Stenciling

The Storm Drain Stenciling Program continues to raise community awareness and alert community members of the connection between our storm drains and the Chesapeake Bay. While the County's SWM program requires stenciling on all new developments, this program

focuses on stencils as a means of educating the citizens in older communities built prior to stormwater regulations. The County utilizes CBT funding to purchase the paint, tools, and stencils used by the volunteers to stencil the "Don't Dump – Chesapeake Bay Drainage" message. Table E32 provides a summary of the volunteer projects completed during the year.

TABLE E32
2013 VOLUNTEER STORM DRAIN STENCILING

Project Date	Volunteer Group	Number of Volunteers	Number of Inlets Marked
03/09/2013	Charles H. Flowers High School	20	60
04/27/2013	AWS (Mt. Rainier)	10	25
	TOTAL	**30**	**85**

Neighborhood/Community Cleanups

The Neighborhood Cleanup Program, facilitated by DoE, assists communities in cleanup efforts to control litter. Active participation in the cleanup of a local neighborhood, park, road, street, or pond removes potential stormwater pollutants and builds community pride. Many participating groups further enhance and beautify their areas by planting trees, sowing seeds, weeding, watering, and mowing grass. A list of community participation projects and an estimate of the tonnage of trash collected is provided in Table E33.

TABLE E33
2013 VOLUNTEER NEIGHBORHOOD/COMMUNITY CLEANUPS

Project Date	Volunteer Group Name	Tons of Trash
01/26/2013	Town of Forest Heights	3.5
04/06/2013	Potomac AFF Cleanup	9.3
04/20/2013	Anacostia Watershed Society: Earth Day	5.4
04/20/2013	Lower Beaverdam Civic Association: AWS Earth Day	1.1
04/27/2013	Town of Forest Heights	2.8
07/13/2013	Silver Hill Heights Community	1.4
11/09/2013	Riverdale Park Community Association: William Wirt Middle School	3.4
11/16/2013	Buck Lodge Middle School	2.3
	TOTAL	**29.2**

Comprehensive Community Cleanup Program

The CCCP is designed to revitalize, enhance, and help maintain unincorporated areas of the County. DoE and DPW&T work with local civic and homeowner associations to provide a wide range of cleanup and maintenance services over a two-week period. Services provided by this program include bulky trash collection, the tagging and removal of abandoned vehicles, Housing Code/Zoning Ordinance violation surveys, storm drain outfall screening/sampling, roadside litter pick-up, tree trimming, and storm drain maintenance. Although the focus of the program is aesthetic improvement of communities, the County services provided also benefit water quality by removing potential stormwater pollutants including the proper disposal of trash and debris from private property through a scheduled bulky trash pickup, the elimination of heavy metals and toxic substances by towing abandoned vehicles and removing potential pollutants from being discharged into waterways through inlet cleaning. Summaries of outfall

screening and inlet cleaning are provided on pages E-8 and E-24, respectively. Additional programmatic achievements are summarized in Table E34.

TABLE E34
COMPREHENSIVE COMMUNITY CLEANUP ACHIEVEMENTS (01/01/13-12/31/13)

Community	Code Enforcement		Bulky Trash		Vehicle Audit	
	Housing Violations Issued/No.	Zoning Violations Issued/No.	Tires Collected/ No.	Trash Collected/ Tons	Violations Issues/No.	Vehicles Towed/No.
Spring 2012 Cycle						
Radiant Valley	49	7	5	6.51	19	9
West Laurel (Phase 1)	4	12	2	3.37	6	0
West Laurel (Phase 2)	6	16	0	5.17	3	1
Marlton (Phase 1)	12	3	4	4.21	2	0
Marlton (Phase 2)	17	4	2	4.00	0	0
Marlton (Phase 3)	21	0	10	6.00	0	0
Tantallon North	28	4	2	8.07	0	0
Carole Highlands	57	5	7	4.07	11	6
Chapel Oaks/Deanwood Park/Beaver Heights	18	4	2	2.59	24	12
Riverdale Heights/ Crestwood/Riverdale Hills	8	0	7	5.28	7	2
Kastle Estates	27	0	0	4.11	0	0
Wilburn Estates/Rolling Ridge	36	0	0	3.20	3	1
Fort Washington Estates	14	0	4	6.38	1	0
Little Washington/Westphalia Estates	14	0	0	1.00	0	0
Maplewood	210	0	14	3.86	0	0
Presley Manor	5	0	0	4.85	7	5
Fall 2012 Cycle						
Kettering (Phase 1)	17	0	6	6.00	4	1
Kettering (Phase 2)	8	0	0	7.50	3	0
Kettering (Phase 3)	20	0	0	8.00	0	0
Kettering (Phase 4)	9	0	6	7.10	0	0
Forestville Knolls/Forestville Park Estates	28	1	2	5.78	0	0
TOTAL	**608**	**56**	**73**	**107.05**	**90**	**37**

RECYCLING

The WMD of DoE administers County services and programs to reduce solid waste, including recycling, composting, and hazardous materials recovery and disposal. The County continues to host countywide recycling events, as listed in Table E35. These events offer residents of the County an opportunity to conserve natural resources, save energy, and reduce the amount of waste going to the landfill, all positive actions that help to protect the environment.

TABLE E35
COUNTYWIDE WASTE REDUCTION PARTICIPATION EVENTS
(JANUARY 1, 2013 – DECEMBER 31, 2013)

Name of Event (Participant)	Date of Event	No. of Participants
NBC 4/PNC Bank Shredding Event	09/28/2013	2,550
NBC 4 Document Shredding Event	12/07/2013	2,729
Food Scrap Composting Pilot Project	10/23/2013	60
Tire Recycling Amnesty Day	11/13/2013	235
	TOTAL	**5,574**

Single-Stream Recycling

The County's single stream recycling program is heavily promoted through direct mail, press releases, newspaper advertisements, displays, and speaking engagements. The County's MRF processes glass bottles and jars, plastic containers, aluminum, steel, bi-metal cans, and newspaper from 165,000 residences served by the residential curbside single-stream recycling program. Today, the County's MRF is operating with the latest state-of-the-art equipment to accommodate single-stream recycling, processing over 140,000 tons annually.

An educational single-stream recycling display is housed at the MRF and can travel to community events, public libraries and office buildings throughout the County. Tours of the MRF are open to the public, schools, and recycling coordinators, educating over 2,100 individuals annually. The tours conducted during this reporting period are listed in Table E36.

TABLE E36 MATERIALS RECYCLING FACILITY TOURS (JANUARY 1, 2013 – DECEMBER 31, 2013)		
Name of Participant	**Tour Date**	**No. of Participants**
Prince George's County Employees	January 30, 2013	55
Presentation by Recycling Employees	February 13, 2013	22
Presentation by Recycling Employees	March 1, 2013	3
M-NCPPC, Senior Group Tour	March 12, 2013	16
Mrs. Felix	March 13, 2013	17
Cub Scouts, Largo Community Church	March 16, 2013	12
Mr. Harris	March 25, 2013	3
Girl Scouts Group	April 20, 2013	125
Bowie Green Team	June 14, 2013	900
Alice Ferguson Foundation	June 19, 2013	50
Greater Mt. Nebo Senior Group	June 24, 2013	30
Presentation by Recycling Employees	June 27, 2013	3
Presentation by Recycling Employees	June 28, 2013	150
Mr. Gibson	June 29, 2013	7
Mrs. Strictland	July 3, 2013	18
DC Summer Interns	July 8, 2013	16
Baltimore Public Works Employees	July 19, 2013	18
Baltimore Summer Youth Program	July 25, 2013	1,500
Presentation by Recycling Employees	July 27, 2013	30
Senior Group	August 12, 2013	22
Sierra Club	August 23, 2013	300
Bishop McNamara High School	October 1, 2013	175
High Bridges Elementary School	October 17, 2013	300
	TOTAL	3,772

County Office Recycling Program (CORP)

On October 1, 2011, the CORP began single-stream recycling in County offices. An outreach campaign was developed to educate employees on the transition from dual-stream to single-stream collection and increase the amount of recycling collected from County offices. The CORP, which has been in existence since 1990, now serves 84 local County offices; all locations are serviced on a regular pickup schedule. All forms of paper and commingled materials are collected from these facilities by a County contractor. On average 13.5 tons of recyclables are collected monthly with 8 locations also recycling toner cartridges. Approximately 1 ton of toner cartridges are recycled annually through a contract with Recycling Ink.

Source Reduction & Recycling

The *Source Reduction – Stop Waste Before it Starts* brochure, available in English and Spanish, provides tips for reducing waste at home, in the yard, and in the office. The brochure also promotes the use of reusable bags rather than non-biodegradable plastic shopping bags. In order to reinforce their recycling and source reduction message, Recycling Section (RS) staff

regularly distributes outreach materials, gives presentations, and offers giveaways at community and other special events.

Business Recycling and Source Reduction

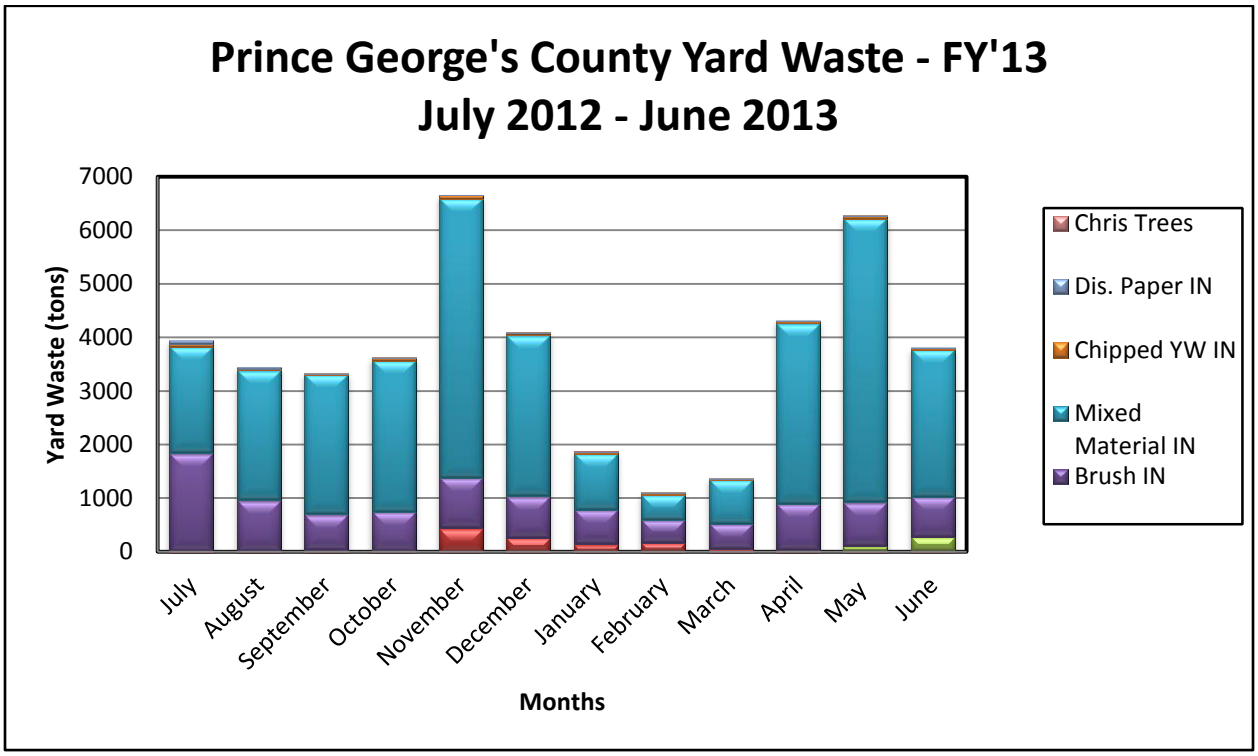
Businesses play an important role in the County recycling programs with approximately one-half of the solid waste stream coming from the business sector. Businesses also account for two-thirds of the County's current recycling rate. RS staff assists in the development and implementation of successful source reduction plans and recycling programs. The types of assistance may include site visits for identifying waste that can be recycled, matching interested businesses with local mentors who have successful recycling programs, or providing technical assistance needed to start up a recycling program.

COMPOSTING

Yard Waste

The Western Branch Yard Waste Composting Facility, operated by the Maryland Environmental Service (MES), accepts yard waste from approximately 165,000 households in the County. The yard waste composting program, including the Christmas tree recycling, diverts a significant tonnage of materials from our solid waste stream, as shown in Figure E10. Leafgro® is sold to the nursery trade, with the revenue generated from the sale returned to the County to offset the cost of the composting operation.

FIGURE E11
YARD WASTE COMPOSTING – FISCAL YEAR 2013



Food Scraps

The Prince George's County DoE WMD is conducting a one-year Food Scrap Composting Pilot Program that is intended to divert food waste from going to the landfill. Currently operating at the Prince George's County Yard Waste Composting Facility (Western Branch) located at 6601 S.E. Crain Highway in Upper Marlboro, the program is geared to commercial businesses and utilizes the leading technology GORE® Cover System that reduces odors and other emissions such as dust and volatile organic compounds (VOCs), while creating high-quality compost. According to the EPA, nearly 14% of all municipal solid waste generated is food scraps and more than 25% what is being landfilled is food waste. The goal of the one-year pilot is to validate the GORE® Cover System technology for organic waste treatment in the County.

CAR CARE, MASS TRANSIT AND ALTERNATIVE TRANSPORTATION

Each year, vehicles release hundreds of tons of harmful emissions into the air we breathe. As atmospheric deposition of nitrogen in the region is a significant source of pollutants, carpooling, vanpooling, bicycling, and using mass transit helps to reduce emissions and protect both air and water quality. Sharing a ride, taking public transportation, and bicycling means fewer vehicles on the road, making the commute to work smoother, quicker, less expensive, easier, and cleaner for everyone. DPW&T provides many services to the residents of Prince George's County, as described below.

RIDE SMART

The *Ride Smart Commuter* website, a service of DPW&T, is designed to provide commuters and employers in Prince George's County with a comprehensive list of transportation solutions available throughout the Washington Metropolitan Area.

RIDEMATCHING NETWORK

The County continues to participate in the Commuter Connections Ridematching Network, a free carpool/vanpool match service available to persons living and/or working in the County. This service is part of a network of Washington Metropolitan commuter transportation organizations and is coordinated by MWCOG.

BIKING TO WORK

Literature on biking to work in the Washington Metropolitan Area is produced by Commuter Connections and the Washington Area Bicyclist Association. This guide, written for employers and employees, promotes cycling as a healthy, clean, quiet, economical, and fun way to get to work. The County annually participates in the regional "Bike to Work Day" activities. In 2014, the County will begin installing bicycle racks on all of *THEBUS* fixed-route vehicles to continue supporting residents, visitors, and employees who choose to bike in the County.

PRINCE GEORGE'S COUNTY VANPOOL SUBSIDY PROGRAM

Since the startup period for a new vanpool is the most difficult time, any qualifying individual who starts a new vanpool is eligible to receive a generous startup subsidy from the County. This program assists residents seeking to start a new vanpool with startup costs and assistance with finding passengers. This three-month subsidy program covers 100% of the first

month's vehicle rental fee (not to exceed $700), 50% of the second month's vehicle rental fee (not to exceed $350), and 25% of the third month's vehicle rental fee (not to exceed $175). A County Rideshare Coordinator is also available to assist groups in forming a vanpool and maintaining ridership.

PARK AND RIDE

Prince George's County in partnership with the state of Maryland and private parking lot owners maintains 13 free park and ride fringe parking lots, conveniently located throughout the County. These lots provide ideal locations for meeting a carpool, vanpool, or for connecting with *THEBUS*, Metrobus or other local transit systems. The 13 lots are:

- Bowie Fringe Parking: MD Route 197 and Northview Drive
- South Laurel: MD Route 197 and Briarcroft Lane
- Montpelier: MD Route 197 and Brock Bridge Road
- Clinton Fringe Parking: MD Route 5 and Woodyard Road
- Equestrian Center: MD Route 4 in Upper Marlboro
- Fort Washington: MD Route 210 and East Swann Creek Road
- Oxon Hill Fringe Parking: MD Route 210 and Oxon Hill Road
- Beltway (I-494/I-95): I-95 and the Capital Beltway
- Laurel Fringe Parking: Sandy Spring Road and Van Dusen Road
- Accokeek Fringe Parking: MD Route 373 and MD Route 210
- Bowie Market Place: MD Route 450 and Stoneybrook Drive
- Capital Plaza Mall: MD Route 450 and Baltimore-Washington Parkway
- Penn Mar Shopping Center: Donnell Drive and Marlboro Pike

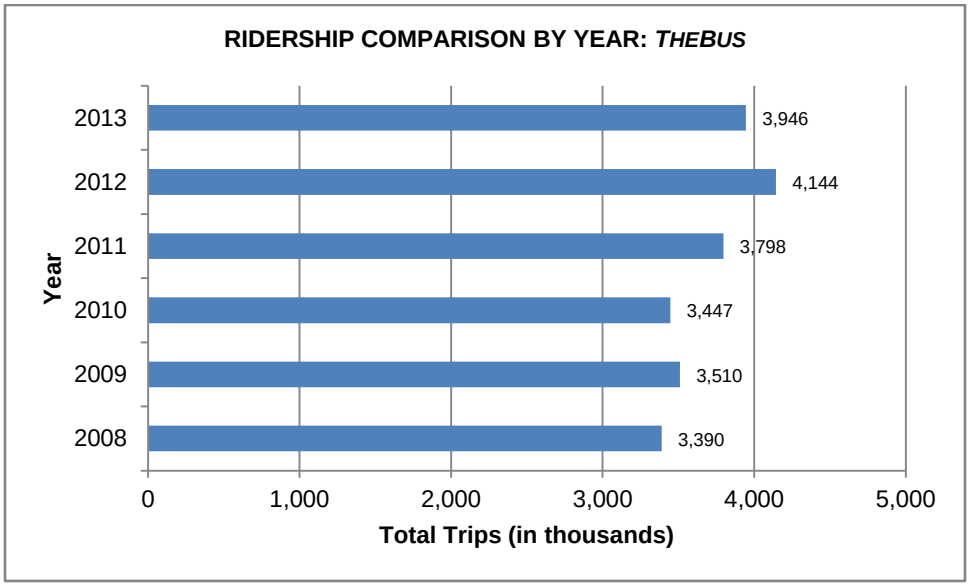
METRORAIL

Operated by the Washington Metropolitan Area Transit Authority, Metrorail currently serves 86 stations throughout the Washington Metropolitan Area, much of it underground. The system intersects at various points, along 106 miles of track, making it possible for passengers to travel anywhere on the system. Currently, 15 Metrorail stations are located in the County making catching the "Metro" convenient to all County residents.

THEBUS, CALL-A-BUS, AND CALL-A-CAB

THEBUS is Prince George's County's public transit system. Schedule information is available through the Internet at *www.princegeorgescountymd.gov* or *www.NextBus.com*. Area specific transit guides offer comprehensive information on public transportation, including transit options. Several transit stops in the County provide Real-Time Passenger Information Display systems (RTPID's) information. Annual ridership figures are shown in Figure E12.

FIGURE E12
RIDERSHIP COMPARISON BY YEAR: *THEBUS*



In 2014, patrons will be able to see all of *THEBUS* transit stops on Google® Maps. The County also provides a demand response, curb-to-curb service *Call-A-Bus*. This service is available to all residents of Prince George's County who are not served by or cannot use existing bus or rail services. However, priority is given to seniors and persons with disabilities. Persons with disabilities must provide their own escort, if needed. Service animals are allowed for the visually impaired.

The contracted bus service provider, Veolia, is a partner in the County's efforts to improve environmental sustainability and reduce the carbon footprint in transit. In 2013, Veolia's bus service contract was amended to incorporate measures to reduce fuel spills and improve the reporting of fuel spills in the maintenance facility. To support the reduction in carbon emissions, operators are trained to not allow vehicles to idle unnecessarily while in revenue service and at the maintenance facility.

F. WATERSHED ASSESSMENT AND PLANNING

Prince George's County, population 871,233 (2011 Maryland State Data Center), is located in the south-central portion of Maryland with a geographic area of 498 square miles, 487 square miles of land and 11 square miles of water. A major drainage divide bisects the County in a north-south direction, with approximately half of the County draining in an easterly direction to the Patuxent River, and the remaining half of the County draining in a westerly direction to the Potomac River. Lands draining to the Patuxent River are primarily located in the County's rural tier and, with the exception of the Western Branch watershed. A map of the County's major watersheds is shown in Figure F1.

BIOLOGICAL ASSESSMENT AND STREAM MONITORING

COUNTYWIDE BIOLOGICAL MONITORING AND ASSESSMENT

The County first conducted biological assessments and stream monitoring in the early 1990s, with the first Round 1 (R1) systematic biological assessments of all County watersheds completed between 1999 and 2003. Monitoring locations were selected within a framework of 41 watersheds, the subwatershed boundaries established during the County's first NPDES MS4 Permit, as shown in Figure F2. The biological monitoring program is focused on sampling a network of stream sites that were selected using a stratified random approach, so that assessment results can be communicated at multiple spatial scales, from individual sites to subwatersheds, and can also be aggregated to broader watersheds and countywide.

The County started a second Round 2 (R2) systematic biological assessment of all County watersheds in 2010. Three years of sampling over a four-year period produced data and site assessments that were used to evaluate biological condition. Individual site assessments use data from field sampling, laboratory analysis of benthic macroinvertebrates, physical habitat quality, and water chemistry to rate the quantitative assessments on a narrative scale of good-fair-poor-very poor. The indicator 'percent biological degradation' is a composite calculation used to assess conditions at spatial scales broader than individual sites.

COUNTYWIDE BIOLOGICAL MONITORING AND ASSESSMENT -ROUND 1 OVERVIEW

Stream assessments performed during Round 1 (1999–2003; Stribling et al. 1999, Leppo et al. 2003, 2004 a,b, Leppo and Lessard 2005) indicated that about half of the streams in the County were impaired, see Table F1, with the majority of those stream sites located in the western areas around the Capitol Beltway, and in the north. Higher quality streams, predominantly rated as fair and good, were found in the east, along the drainage to the Patuxent River mainstem, and in the south near the border of Charles County and Mattawoman Creek. This pattern was expected due to greater development intensity located nearer primary transportation corridors and population density in the north.

FIGURE F1
MAJOR WATERSHEDS

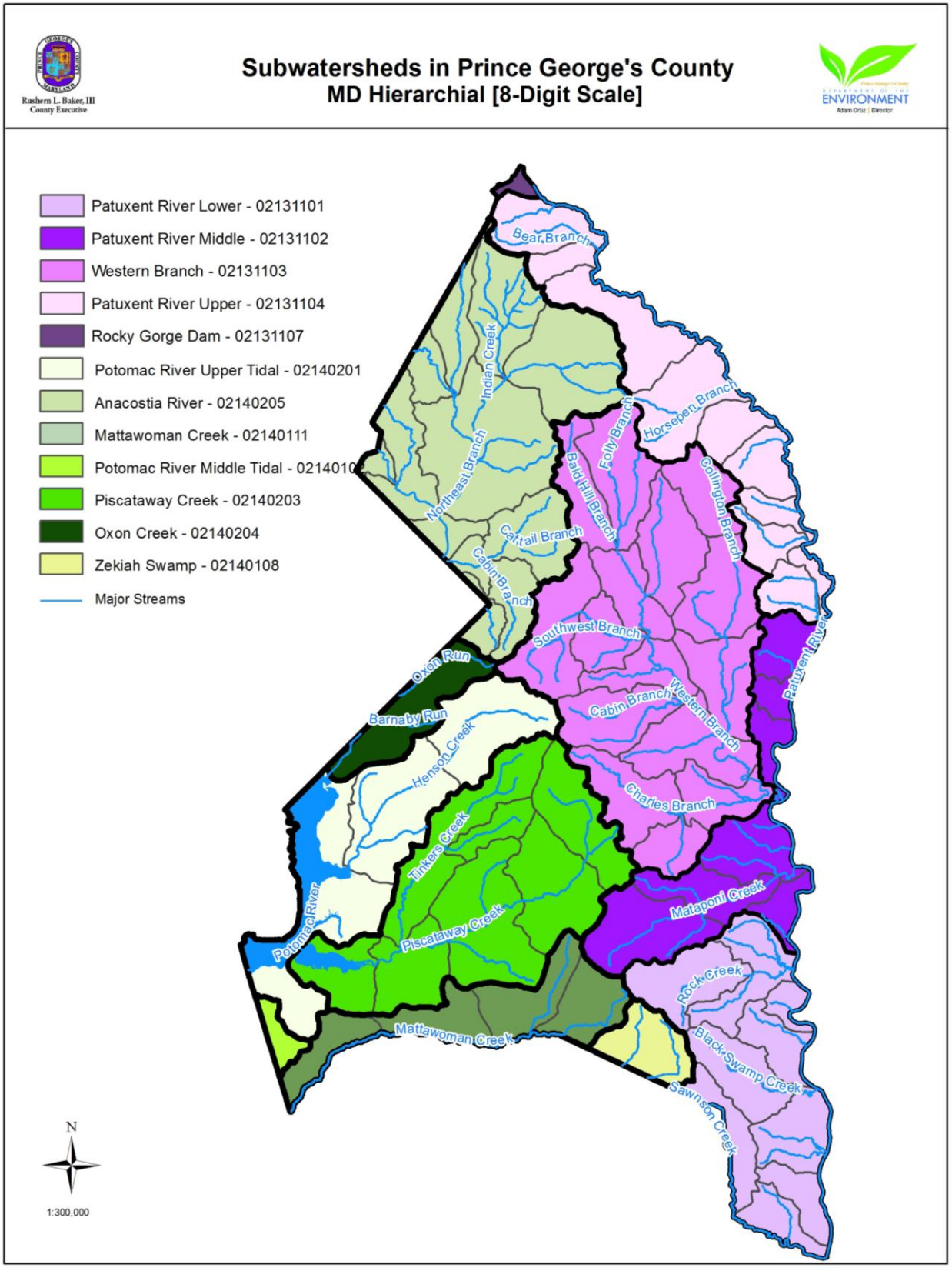


FIGURE F2
BIOLOGICAL ASSESSMENT AND STREAM MONITORING SUBWATERSHED STUDY AREAS

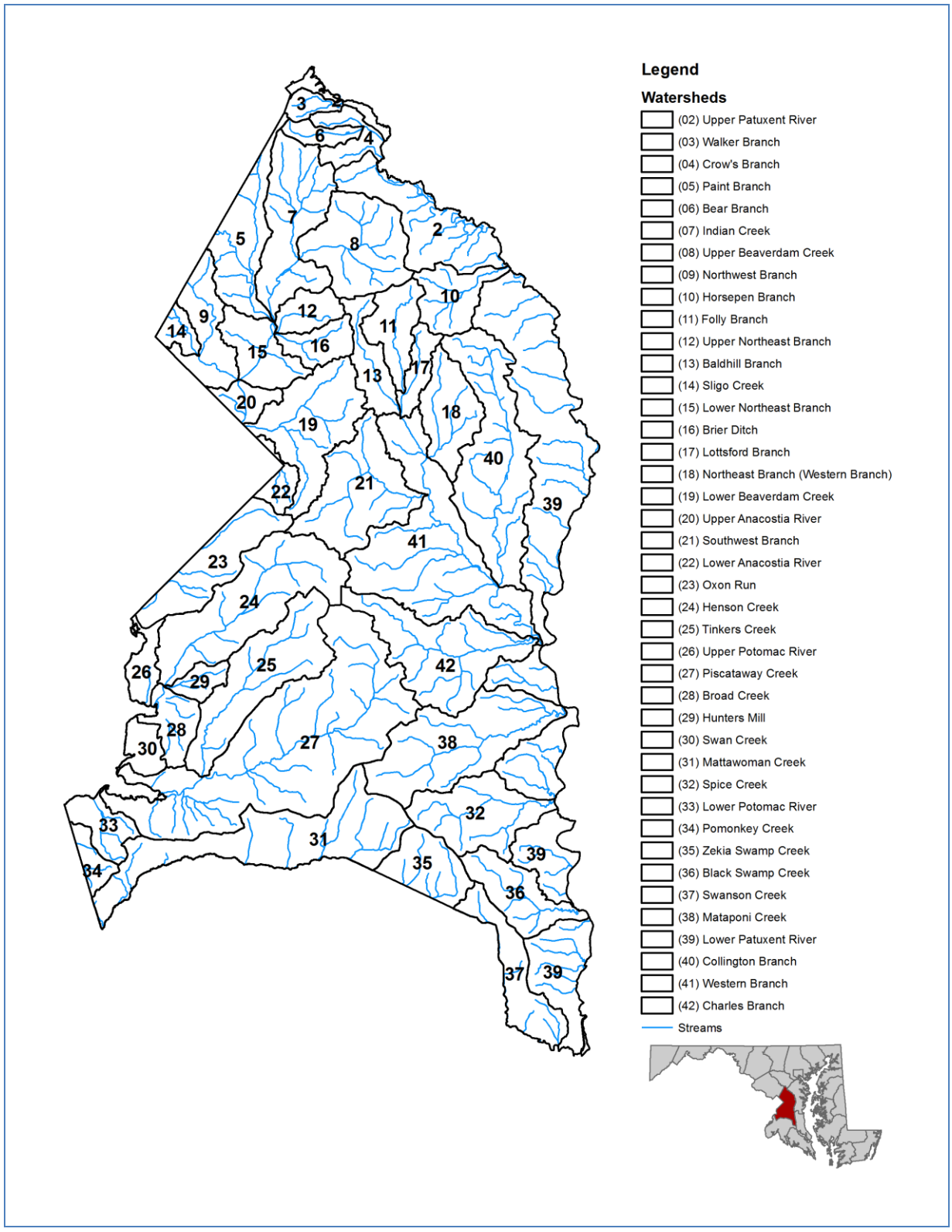


TABLE F1
ROUND 1 (1999-2003) ESTIMATE OF BIOLOGICALLY DEGRADED STREAM MILES*

Major Basin	Watershed		Stream Miles (1st – 3rd Order)		
	No.	Name	Total	Impaired	
				No.	Pct.
Anacostia	5	Paint Branch	17.0	6.4	37.5
	7	Indian Creek	20.4	11.9	58.3
	8	Upper Beaverdam Creek	16.3	10.2	62.5
	9 + 14	Northwest Branch + Sligo Creek	11.9	11.9	100.0
	12 + 15 + 16	Upper Northeast Branch + Lower Northeast Branch + Brier Ditch	15.1	9.4	62.5
	19	Lower Beaverdam Creek	16.2	14.8	91.7
	20 + 22	Upper Anacostia River	6.7	6.7	100.0
		Total	103.7	71.4	68.9
Patuxent	2	Upper Patuxent River	43.9	27.4	62.5
	3 + 4 + 6	Walker Branch + Crow's Branch + Bear	13.4	4.5	33.3
	10	Horsepen Branch	9.9	3.3	33.3
	11 + 13 + 17	Folly Branch	15.0	9.4	62.5
	18	Northeast Branch (Western Br.)	9.9	7.4	75.0
	21	Southwest Branch	17.3	17.3	100
	32	Spice Creek	16.0	0.0	0.0
	36	Black Swamp Creek	10.6	0.0	0.0
	37	Swanson Creek	15.9	4.3	27.3
	38	Mataponi Creek	24.2	4.4	18.2
	39	Lower Patuxent River	65.9	36.2	55.0
	40	Collington Branch	29.2	17.0	58.3
	41	Western Branch	38.3	12.8	33.3
	42	Charles Branch	24.5	4.9	20.0
		Total	333.8	148.9	44.6
Potomac	23	Oxon Run	10.9	10.9	100.0
	24 + 28 +29	Henson Creek + Broad Creek + Hunters Mill Creek	30.9	27.5	88.8
	25	Tinkers Creek	16.6	11.1	66.7
	26 + 30 + 33	Upper Potomac River + Lower Potomac River + Swan Creek	8.1	4.6	57.1
	27	Piscataway Creek	56.9	8.5	15.0
	31	Mattawoman Creek	35.6	16.4	46.2
	34 + 35	Pomonkey Creek + Zekiah Swamp Creek	12.6	2.1	16.6
		Total	171.6	81.2	47.3
		Prince George's County Total	609.1	301.5	49.5

**Assessments based on the Maryland Biological Stream Survey's Benthic-Index of Biotic Integrity (MBSS, B-IBI). Watershed numbers correspond to the County watershed convention shown in Figure F2. Boldface denotes subwatersheds sampled in the third year of Round 2 (2013).*

COUNTYWIDE BIOLOGICAL MONITORING AND ASSESSMENTS - ROUND 2

2010 Monitoring Results (Round 2 Year 1)

Among the watersheds assessed in 2010, there was a fairly high density of streams with sites rating as degraded, about 70% poor or very poor with the Benthic-Index of Biotic Integrity (B-IBI), and 36.7% based on the Fish-IBI (F-IBI). Out of the 50 sites, there were only 11 that rated as good, for either benthic macroinvertebrates or fish, and none that rated as good for both indicators. Generally, most of the more degraded sites were found in the subwatersheds draining to the Anacostia basin, including Sligo Creek, Lower Northeast Branch, Briar Ditch, and Indian Creek. It seems as if the F-IBI revealed more severe degradation (very poor) in those same watersheds than did the B-IBI, although the benthic indicator more consistently rated streams as poor. Streams in the north-central watersheds, Folly, Baldhill, and Lottsford Branches, as well as the Charles Branch watershed, all headwater tributaries to the Patuxent River, overall seemed to be less degraded with a higher number of steams rated as good and fair for both indicators. As a result of the benthic indicator being apparently more sensitive to stressor conditions, a greater degree of degradation was observed in the northwestern part of the County, primarily in the Anacostia subwatersheds, but also in the Folly, Baldhill, and Lottsford Branches watershed group of the Patuxent. The F-IBI showed a similar pattern of degraded conditions, though with a reduced intensity, and the greatest extent of degradation was in the Upper and Lower Anacostia River (Watts Branch).

2011 Monitoring Results (Round 2 Year 2)

A total of 46 percent of the sites sampled in 2011 (Round 2, Year 2) were rated as biologically degraded, with B-IBI ratings of poor or very poor. The highest proportion of these sites were found in the Anacostia basin (71%), followed by the Potomac (45%) and Patuxent (43%) basins. These results are similar to those found during 2010. Only 20 sites were rated good and were equally distributed. Physical habitat quality throughout the County is generally degraded. Overall, 72% of streams sampled in 2011 were rated as partially supporting or non-supporting of reference conditions. Among basins, 55% of the Patuxent basin sites were degraded; the Potomac and Anacostia basins exhibited degraded habitat conditions at 46% and 43% of sites, respectively. Bank stability, sediment deposition, and channel sinuosity were limiting features in all basins and are likely the result of a high level of development. Sampling during Year 2 accounted for approximately 43% of the stream channel miles in the County, raising the cumulative total during Round 2 to 62%. Of the 100 sites sampled, 7 are located in the Anacostia River watershed, 58 are in the Patuxent River watershed and 35 are in the Potomac (non-Anacostia) River. To date, the Anacostia River watershed is approximately 84% assessed, with the B-IBI indicating that 80% of stream miles are ecologically degraded. Fifty-six percent of the Patuxent River watershed is assessed, with 53 percent degraded stream miles, and the Potomac River watershed is 53 percent degraded with just less than one-half (47 percent) of the stream miles assessed.

2013 Monitoring Results (Round 2 Year 3)

Approximately 50% of the Year 3 sites were rated as biologically degraded, with B-IBI ratings of poor or very poor. The highest occurrence of these sites was in the Anacostia basin (71%), followed by the Potomac (54%) and Patuxent (44%) basins. Only 13 sites were rated good and were nearly equally distributed in the Patuxent and Potomac basin (6 and 7 sites, respectively); there were none in the Anacostia. Physical habitat quality was generally degraded,

with approximately 48% of streams sampled in 2013 designated as partially supporting or non-supporting of reference conditions. Among the basins, 43% of the Patuxent basin sites were degraded; the Potomac and Anacostia basins exhibited degraded habitat conditions at 49% and 86% of sites, respectively. Bank stability, sediment deposition, and channel sinuosity were limiting features in all basins. Sites sampled during Year 3 comprised approximately 34% of the stream channel miles in the County, with an estimated 49% of miles deemed biologically degraded according using the B-IBI.

SUMMARY CONCLUSIONS

Although there are differences in "percent biological degradation" from the first round of assessments (1997-2003) to the second round of assessments (2010-2013), only one of the subwatersheds showed a statistically significant change. The changes between Round 1 and Round 2 of the Countywide Biological Monitoring Programs are graphically depicted in Figure F3. Values in green indicate improving conditions; red, worsening conditions; and yellow, no change. Values with an asterisk (*) indicate statistical significance at $p<0.05$. The assessment similarities suggest that stressor management, whether in the form of stormwater (or other) BMPs, control of chemical pollution as toxics or nutrient input, or enhancement of physical habitat conditions, has been insufficient to reduce stressor loads to the degree necessary for biological recovery. This is likely due to unknown sources to which control or elimination techniques to-date have not been applied. However, the results also suggest that those management activities may be allowing the watersheds to "hold their own" in the face of ongoing development, increased population, aging infrastructure, and new and unknown stressors. Efforts at sediment or stormwater discharge control, pollution prevention, trash pickup, and engendering community stewardship, likely have had some local success and associated benefits. Local or small scale activities such as these, if applied at broad scales in a rigorous manner, can collectively lead to overall healthier watersheds.

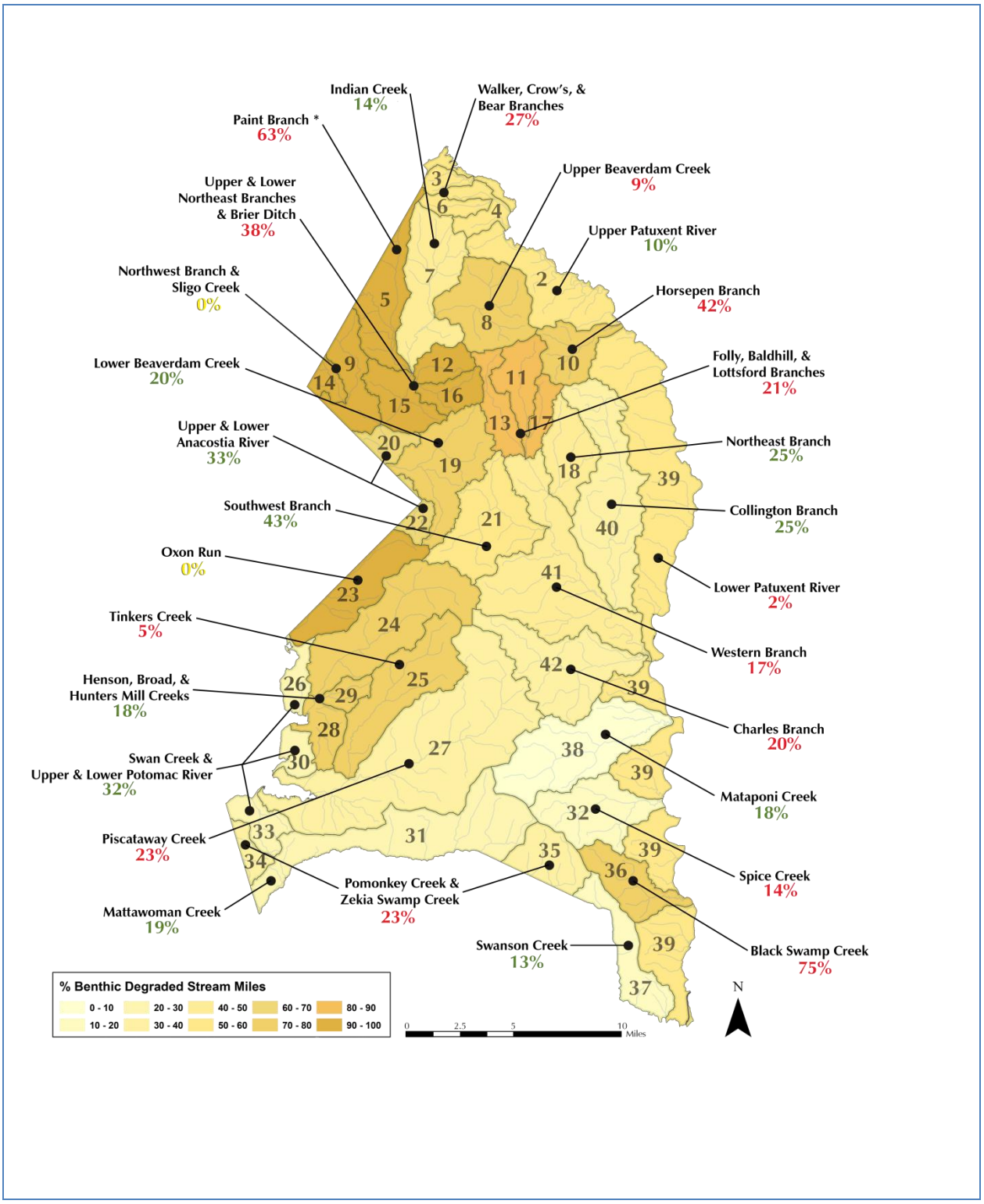
Aquatic biological conditions in the County have not changed much since the early 1990s. Restoration and protection activities may have been overtaken by new stressors and sources introduced by ongoing development, expansion of areas of disturbance and urban/suburban areas, and aging infrastructure. This suggests that the County's investment in environmental management may be assisting the watersheds in "holding their own" in the face of ongoing development, increased population, aging infrastructure, and new and unknown stressors and has helped prevent conditions from being even worse, thus allowing a partial statement of success to be made. There is substantial additional effort needed if aquatic biological conditions, as the principal indicator of watershed health, are to move in the desired direction. The "Biological Assessment and Monitoring of Streams and Watersheds in Prince George's County" is provided on DVD, Watershed Assessment and Planning\Biological Monitoring.

NEW WATERSHED RESTORATION PLANNING INITIATIVES

RAIN CHECK REBATE PROGRAM

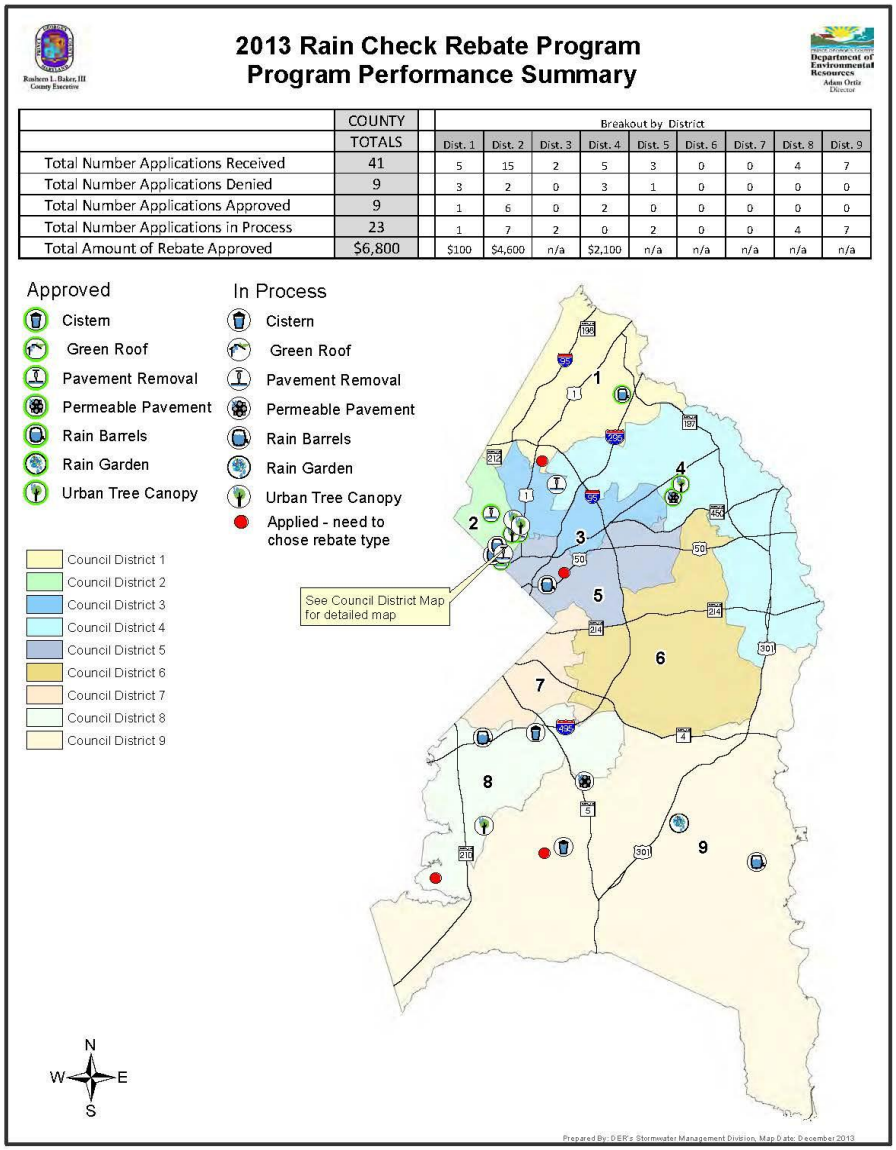
Prince George's County initiated a new *Rain Check Rebate Program* in the 2013. The program provides eligible applicants the opportunity to receive rebates for installing approved stormwater management practices. Homeowners, businesses, and nonprofit entities (including housing cooperatives and faith-based institutions) can recoup some of the costs of installing practices covered by the program. To ensure the success of this program, an extensive public

FIGURE F3
COUNTYWIDE BIOLOGICAL MONITORING CHANGES BETWEEN ROUND 1 AND ROUND 2



outreach and education strategy was developed and conducted to promote the adoption of endorsed stormwater management practices. Because the program is a volunteer program, it required a comprehensive and coordinated outreach campaign to gain maximum participation by the property owners in the County. Before launching the program Countywide, six pilot communities were selected to determine the best technical and outreach approaches for ensuring success in the future. This public outreach strategy identifies the outreach activities and materials needed to accomplish the goals of the stormwater management rebate program. Figure F4 identifies the overall performance of the program in 2013. Additional materials are provided on DVD, Watershed Assessment and Planning.

FIGURE F4
RAIN CHECK REBATE PERFORMANCE



	COUNTY TOTALS	Breakout by District								
		Dist. 1	Dist. 2	Dist. 3	Dist. 4	Dist. 5	Dist. 6	Dist. 7	Dist. 8	Dist. 9
Total Number Applications Received	41	5	15	2	5	3	0	0	4	7
Total Number Applications Denied	9	3	2	0	3	1	0	0	0	0
Total Number Applications Approved	9	1	6	0	2	0	0	0	0	0
Total Number Applications in Process	23	1	7	2	0	2	0	0	4	7
Total Amount of Rebate Approved	$6,800	$100	$4,600	n/a	$2,100	n/a	n/a	n/a	n/a	n/a

Looking forward DoE is partnering with the CBT to leverage CBT's experience and expertise with public education and outreach, administration and operation of grant-funded stormwater management water quality improvement projects, and dedicated resources for applicant guidance and support on applications, BMP selection and installation practices. DoE looks to guide CBT efforts to increase program participation through continued emphasis on residential property owners and focused outreach and participation with our commercial, industrial, municipal, and non-profit property owners. DoE will also evaluate Rain Check Rebate integration opportunities with the Public Private Partnership (P3) contract. Opportunities may include communitywide outreach to install eligible rebate practices, perform energy audits, and install green energy practices (i.e., solar systems) and maintenance operations.

Additionally, DoE is partnering with the Low Impact Design Center to implement a Contractors Certification Program. The program will provide opportunity for professional landscapers and other green businesses to attend and complete a non-credit training program in non-structural BMP selection, installation, and maintenance practices. DoE is working with the Low Impact Design Center and Prince George's County Community College to implement the course during the fall of 2014. This program will provide a list of "qualified contractors" to property owners looking for services under the *Rain Check Rebate Program*, at the same time supporting the County's Jobs First Act in developing and promoting local business development and job growth.

To enhance the program, promote increased participation, and expanded opportunities to community oriented projects, DoE is considering the following program enhancements:

- Increased rebate rates (promote stronger incentive for higher cost/higher yield practices such as pavement removal, and permeable pavement installation);
- Increased residential rebate ceilings (promote multiple single property project installations); and
- Allow "common area" properties (homeowner and civic associations to participate with Rebate Program) to take advantage of larger scale treatment opportunities. DoE will work with Council on legislative amendments as necessary to implement recommended revisions.

ALTERNATIVE COMPLIANCE PROGRAM

A new alternative compliance program is under development with County centers of worship and non-profit organizations. The goal of the program is to increase the availability of land for County restoration project construction. The County has identified close to 800 potential sites suitable for program participation. The program kick-off is anticipated for late 2014.

PRIVATE PUBLIC PARTNERSHIP

The County is in the middle of negotiations for a P3 to work on restoration projects on County right-of-ways and other suitable land, this includes restoration of 2,000 impervious acres. Contract negotiations are expected to continue into 2015.

COUNTYWIDE GREEN/COMPLETE STREETS PROGRAM

DPW&T initiated a Countywide Green/Complete Streets Program during the 2011 reporting year as a strategy for addressing mounting MS4 and TMDL treatment requirements. The program seeks out opportunities to incorporate stormwater control measures, environmental enhancements, and community amenities within the DPW&T Capital Improvement Projects. The types of enhancements that are being evaluated include low impact design, tree shading, ESD in the right-of-way, energy efficient lighting, and the utilization of recycled materials. The County is developing a document that allows for green infrastructure incorporation into street retrofits and newly designed roadways. The document proposes techniques for a "road diet," including reducing the right-of-way width and existing impervious surfaces, roadway grade changes to allow center flow to medians, and BMPs to improve water quality.

An evaluation of the County's standard roadway cross-sections and details was also conducted to identify where existing roadway standards could be modified. DPW&T has initiated the process of examining where the Standard Street Section and Standard Details need revision and updating to increase the opportunity for water quality BMP incorporation within the right-of-way. A scoping meeting was held in July with representatives from DPW&T, DoE, and DPIE. Concurrently, DPIE is spearheading a committee to determine how new development can manage the stormwater generated from roadway areas within the right-of -way and remove impediments.

The first Green/Complete Street project to be constructed is the Ager Road project. This project will use vegetated swales (bio-swales and bio-filtration), inlet filtration devices, modular wetlands, outfall protection, and stream restoration within the right-of-way to address TMDL load reductions. In addition to the green components of the project, the design incorporates linked pathways for pedestrians, bus shelters, street furniture, light-emitting diode (LED) lighting, and integrated bike lanes, making this a true Green/Complete Street. DPW&T's OEPM has incorporated Green/Complete Street design elements into additional highway and bridge projects. A spreadsheet of Green/Complete Streets currently in various stages of development is provided on DVD, Watershed Assessment and Planning.

The Green/Complete Street projects are implemented as retrofits to existing roadways and present a multitude of challenges. Typically, retrofitting existing roadways requires utility and infrastructure relocation, citizen involvement and perception, and regulatory compliance. Due to the complexity of a typical green/complete street project, the projected timeframe for completion from inception to construction may take 5 years.

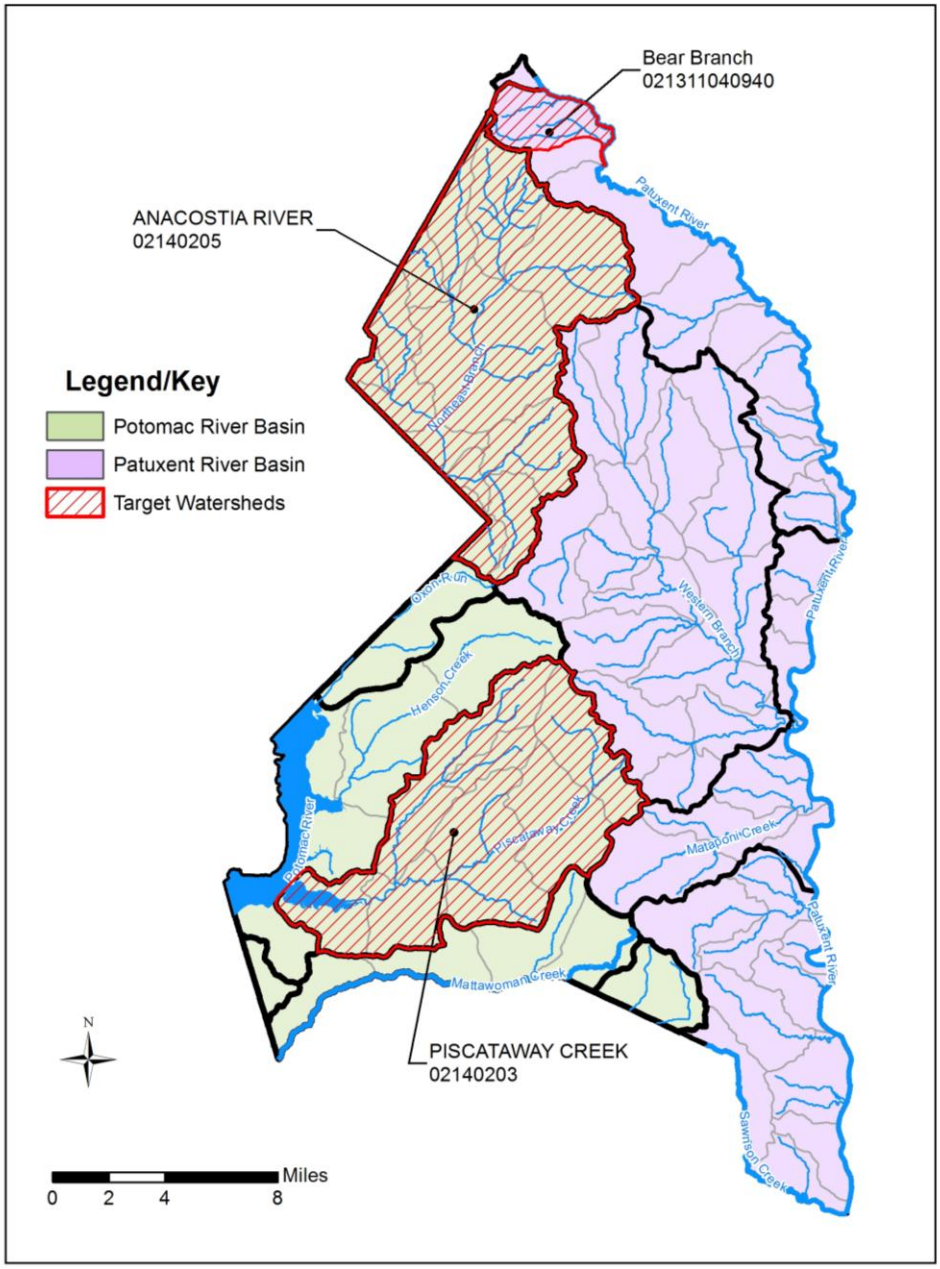
Wherever feasible, projects will incorporate new SWM BMPs to provide treatment for legacy roadways when roadway maintenance includes major reconstruction. During the reporting year, the County Council adopted a bill (CB-83-2012), requiring all County projects to address water quality control.

WATERSHED PLANS

In partnership with local, State and Federal agencies, the County completed the Anacostia River Watershed Plan in 2009. About 17% of the County, or 12 watersheds at the MD 12-digit scale, are located in the Anacostia. Watershed plans have also been drafted for the Piscataway Creek and Bear Branch watersheds, which cover an additional 14% of the County, or

an additional 8 watersheds. Assessments have been completed for all targeted watersheds shown in Figure F5.

FIGURE F5
TARGETED WATERSHED RESTORATION PLANNING



G. WATERSHED RESTORATION

The County's watershed restoration program is implemented in three major focus areas, water quality retrofit projects in partnership with grant funded Federal and State initiatives, construction of SWM retrofit projects, and County source control and public participation programs. New restoration initiatives, as discussed under the Watershed Restoration and Planning section of the report, and local and regional TMDL's are under also under development to meet the County's restoration goals established by the permit.

PUBLIC PARTICIPATION PROGRAM ACHIEVEMENTS

Prince George's County maintains robust public participation programs that benefit local water quality. Under the County's CCCP, a program designed to revitalize, enhance, and help maintain unincorporated areas of the County, over 21,000 households were provided with a wide range of clean up and maintenance services including bulky trash collection, the tagging and removal of abandoned vehicles, Housing Code/Zoning Ordinance violation surveys, roadside litter pick-up, tree trimming, storm drain maintenance, and outfall sampling. The County also assisted an additional 159 communities, providing supplies and assisting with the removal and proper disposal of nearly 50 tons of waste collected by the community, under the Neighborhood Cleanup Program and the County Executive's Clean Up, Green Up event. The achievements realized through public participation programs are summarized in Table G1.

TABLE G1
POLLUTANTS REMOVED – PUBLIC PARTICIPATION PROGRAMS

Program	No. of Tires	No. of Vehicles Towed	Tons of Solid Waste	No. of Communities	No of Trees and Shrubs Planted
Comprehensive Community Cleanup	73	37	107.5	21	--
Neighborhood Cleanup	--	--	29.2	8	--
Clean Up, Green Up	--	--	19.0	191	2,878
TOTAL	**73**	**37**	**152.7**	**220**	**2,878**

COUNTY SOURCE CONTROL PROGRAMS

In addition to community based assistance, the County also provides services that control potential pollutants at the source. A brief description of the County's source control programs are described below with a summary of the achievements for this year provided in Table G2.

HOUSEHOLD HAZARDOUS WASTE

The County maintains a permanent Household Hazardous Waste Acceptance Site, open and free-of-charge to County residents, at the BSR Landfill in Upper Marlboro. The County also provides a "front door" waste pickup service option for elderly or disabled residents who qualify for this free service. Approximately 10,553 vehicles dropped off hazardous and electronic waste this reporting year.

SINGLE-STREAM RECYCLING

The County's MRF, operating with the latest state-of-the-art equipment, processes glass bottles and jars, plastic containers, aluminum, steel, and bi-metal cans, and newspaper from165,000 residences served by the residential curbside single-stream recycling program. The

tonnage of materials recycled is approximately 42% of the total waste stream with 208,034 tons of materials recycled this year.

SCRAP METAL AND TIRE RECYCLING

As an alternative to disposal, the BSR Landfill recycles scrap metal, major household appliances, and tires brought to the BSR Landfill by residents. Prior to recycling, chlorofluorocarbons (CFC) are recovered from used appliances by a certified Maryland Environmental Service (MES) contractor. During the reporting period, 760 tons of scrap metal and 405 tons of tires were recycled.

YARD WASTE COMPOSTING

The Western Branch Yard Waste Composting Facility, operated by the MES, accepts yard waste from approximately 165,000 households in the County. Leaves and grass clippings that would have normally been disposed of in a landfill are composted into Leafgro®, superior quality compost used extensively by the landscape industry. The revenue generated from the sale of Leafgro® is used to offset the cost of the composting operation.

COUNTY OFFICE RECYCLING PROGRAM

On October 1, 2011, the CORP began single-stream recycling in County offices. The CORP, which has been in existence since 1990, now serves 72 local County offices, 56 of the locations are serviced on a regular pickup schedule, and 16 locations are served on an as-needed basis. On average 25 tons of recyclables are collected monthly with 8 locations also recycling approximately 2,000 pounds of toner cartridges annually.

TABLE G2
SOURCE CONTROL PROGRAMS – COUNTY PROGRAMS

Program	Electronics Recycled/ Tons	Hazardous Waste/ Gallons	Hazardous Waste/ Tons	Solid Waste Recycled/ Tons
Household Hazardous Waste	196.3	112,398	52.5	--
Scrap Metal Recycling	--	--	--	759.4
Tire Recycling	--	--	--	404.8
Document Shredding	--	--	--	21.0
Toner Cartridge Recycling	--	--	--	1.0
Yard Waste Composting	--	--	--	50,078.0
Single-Stream Recycling	--	--	--	208,034.0
CORP	--	--	--	303.0
Food Scrap Recycling	--	--	--	2,000.0
TOTAL	**196.3**	**112,398**	**52.5**	**261,601.2**

LITTER CONTROL PROGRAMS

The County provides litter control services to prevent discarded trash from entering the County's MS4, especially in the Anacostia River watershed. A brief description of the County's control measures are described below.

MECHANICAL TRASH SCREENS

The Edmonston, Colmar Manor, Bladensburg, and Brentwood pumping stations, located in the Anacostia River watershed, are equipped with mechanical trash screens. Floatable trash is intercepted, mechanically screened, and placed into a trash dumpster for proper disposal.

ROADSIDE LITTER PICKUP

The County maintains an aggressive litter control and collection program along County maintained roadways. The County's most highly littered roadways are serviced as often as 24 times per year, major collector and arterial urban roadways are serviced weekly, and rural roadsides served at least once per month. Illegal dumping in the right-of-way is removed within five working days of notification.

STREET SWEEPING

The County prioritizes street sweeping operations to selected arterial, collector, and industrial streets, with service to residential subdivision streets provided on a request only basis. During this reporting year, 3,878 curb miles of roadways were swept collecting 1,372 tons of debris.

END-OF-PIPE TRASH NETTING SYSTEMS

In 2013, a decision was made to discontinue the end-of-pipe trash netting system at Flagstaff Street. A second end of pipe trash net system, located at Ray Road, was structurally damaged by high storm flows in 2009 and the system has not functioned since that time. Community concerns regarding the trash nets and the cost of the practice, as a function of its trash removal efficiency, lead to the decision by the County to discontinue the practice at the Flagstaff Street location. During 2012, the Flagstaff Street trash nets were changed six times removing 16,901 pounds of debris at a cost of $13, 086. The Anacostia Trash TMDL-Related Baseline Monitoring (June 2008-July 2009), prepared by the Metropolitan Washington Council of Governments (MWCOG) and submitted in the County's 2009 Annual report, concluded that the Flagstaff Street trash trap contents were 95% organic matter by weight. Based upon the monitoring results of the MWCOG study, the County estimated that of the 16,901 pounds of debris collected in 2012, only 845 pounds were trash, which equates to a cost per pound of just under $20 or $40,000 per ton.

WATERSHED RESTORATION CAPITAL PROJECTS

The Capital Projects Design (CPDS) and Capital Projects Construction (CPCS) Sections manage capital projects to meet local priorities and community needs. Project types may include flood abatement and storm drainage relief, stream restoration, grants, community revitalization, as well as watershed restoration to treat impervious surfaces, the benchmark by which the County's watershed restoration program is evaluated. Balancing project delivery to meet local priorities with the rigorous regulatory requirements mandated by the County's MS4 Permit is a formidable challenge. The County's watershed restoration approach is designed to meet local priorities and regulatory requirements, and this will be achieved through a concerted effort of funding, restoration opportunity, and BMP applicability and efficiency. Tables G4 through G6 summarize the 2013 status of the watershed restoration projects that were in planning, design, or under construction. Table G7 summarizes the watershed restoration projects that were completed during this reporting year with Table G8 providing an overall summary of capital improvement restoration projects. Table G3 summarizes projects which were evaluated and dropped during planning or design phases. A geodatabase of capital improvement restoration projects is provided on DVD, Source Identification/Restoration Projects.

TABLE G3 2013 WATERSHED RESTORATION PROJECTS – DROPPED					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A.* / Acres**	**Cost / K****
021402030800	Isaac J. Gourdine Middle School Piscataway Study ID No. S-5	New BMP	20 Planter Boxes	2.2	313
	Isaac J. Gourdine Middle School Piscataway Study ID No. S-5	New BMP	Bioretention without Underdrain	0.9	
021402030801	Clinton Woods SWMF Piscataway Study ID No. R-8	New BMP	ED Wetland	35.1	636
			SUMMARY	**38.2**	**949**

**I.A. (impervious acres treated by bmp).*
***K (cost in thousands of dollars) Cost estimates the total cost for each BMP (planning, design and construction).*

TABLE G4 2013 WATERSHED RESTORATION PROJECTS – PLANNING					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A.* / Acres**	**Cost / K****
021311040940	Bear Branch Stream Restoration Phase II	New BMP	Stream Restoration of Hospital Branch 450LF Restoration	4.5[1]	1,800
021402050822	Berwyn Heights Pond Project ARP ID No. IC-01-S-23A	New BMP	Flow Splitter to Wet Pond	18.3	578
			SUMMARY	**22.8**	**2,378**

**I.A. (impervious acres treated by bmp).*
***K (cost in thousands of dollars) Cost estimates the total cost for each BMP (planning, design and construction).*
[1] Treatment credit for stream restoration assumes100 l. f. =1.0 I.A. restored (MDE's Accounting for Stormwater Load Allocations and Impervious Acres Treated, June 2012).

TABLE G5 2013 WATERSHED RESTORATION PROJECTS – DESIGN					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A.* / Acres**	**Cost / K****
021402030801	West Boniwood Turn	New BMP	Stream Restoration: 300 LF	3.0[1]	513
021402050816	Beaverdam 20	New BMP	Stream Restoration: 620 LF & Upland Retrofit	6.2	1,087
021402010796	Tucker Road	New BMP	Stream Stabilization: 220 LF	2.2[1]	260

TABLE G5, CONTINUED 2013 WATERSHED RESTORATION PROJECTS – DESIGN					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A.* / Acres**	**Cost / K****
021311040921	Pyles Drive I	New BMP	Stream Stabilization: 800 LF	8.0[1]	710
021311040940	Kenny Road	New BMP	Stream & Slope Stabilization: 125 LF	1.3[1]	420
021402050816	Pennsy Drive	New BMP	Bioretention	1.5	285
021402010797	Yorkville Road	New BMP	Stream & Slope Stabilization: 450 LF	4.5[1]	600
021402010797	Regency Village	New BMP	Stream Restoration: 140 LF	1.4[1]	205
021402030799	Taylor Avenue	New BMP	Stream & Slope Stabilization: 500 LF	5.0[1]	1,680
021402050822	Fordham Street Drainage Channel Stabilization	New BMP	Stream Stabilization: 200 LF & Constructed Wetland	2.0[1]	597
021402050822	Lower Northwest Branch Phase I: Nutrient & Sediment Reduction	New BMP	Stream Restoration: 6,336 LF	63.4[1]	4,500
021402010797	Yorkville Road Site Grading and Restoration	New BMP	Impervious Acreage Removal	0.4	69
021402030800	Tinkers Creek Submerged Gravel Wetland Piscataway Study ID No.C-6	New BMP	Infiltration Basin	6.6	404
021402030802	Pea Hill Branch SWM Retrofit Piscataway Study ID No. R-3	Retrofit	ED Wetland	40.2	259
021402030800	Friendly High School BioR No.1 Piscataway Study ID No. S-9	New BMP	Bioretention	1.6	291
	Friendly High School BioR No.2 Piscataway Study ID No. S-9	New BMP	Bioretention	0.6	
	Friendly High School BioR No.3 Piscataway Study ID No. S-9	New BMP	Bioretention	0.2	
	Friendly High School BioR No.4 Piscataway Study ID No. S-9	New BMP	Bioretention	0.1	
021402050816	Washington Commerce Center SWMF Retrofit	Retrofit	ED with Constructed Wetland	64.0	948

TABLE G5, CONTINUED 2013 WATERSHED RESTORATION PROJECTS – DESIGN					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A.* / Acres**	**Cost / K****
021402030800	Temple Hill Stream Restoration	New BMP	Stream Stabilization: 1100 LF	11.0[1]	617
021402050825	Anacostia Restoration IC-M-01-S-2B (RKK)	New BMP	Bioretention and Impervious Area Removal	3	179
021402050824	Anacostia Restoration IC-U-01-S-30 (RKK)	New BMP	Bioswale	2.5	53
021311030919	Brown Station Road LID Demonstration Project	New BMP	Rain Garden	TBD	64
021402050811	Onslow Way	New BMP	Stream Stabilization	TBD	205
021402050825	Center Park Pond Retrofit	New BMP	Retention Pond (Wet Pond)	14.9	617
021311030929	Greentec Pond Retrofit	BMP Retrofit	Retention Pond (Wet Pond)	10	717
021402030804	Halloway Estates Pond Retrofit	New BMP	Retention Pond (Wet Pond)	6	215
021402050811	London Wood Pond Retrofit	BMP Retrofit	Retention Pond (Wet Pond)	19.8	287
021402050816	Spectrum 95 Pond Retrofit	BMP Retrofit	Retention Pond (Wet Pond)	11.9	686
021311030919	Brown Station Road LID Demonstration Project	New BMP	Bioretention	TBD	TBD
021311030923	Collington Center - Pond #3	BMP Retrofit	Extended Detention Structure, Wet	170	1,200
021311030920	Collington Center - Pond #4	BMP Retrofit	Retention Pond (Wet Pond)	56	1,205
021402040805	Owen Road Stream Bank Stabilization: 600 LF Stream Stabilization	New BMP	Stream Stabilization	6.0[1]	TBD
021402050816	Cattail Branch Wetland Project No. 1 RKK ID No. 102	New BMP	Submerged Gravel Wetland	7.0	478
	Cattail Branch Wetland Project No. 2 RKK ID No. 102	New BMP	Submerged Gravel Wetland	5.4	478

TABLE G5, CONTINUED 2013 WATERSHED RESTORATION PROJECTS – DESIGN					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A. * / Acres**	**Cost / K****
021402050816	73rd Avenue Green Street Project (BioR No. 1)	New BMP	Bioretention	1.5	338
	73rd Avenue Green Street Project (BioR No. 2)	New BMP	Bioretention	0.7	
	73rd Avenue Green Street Project (BioR No. 3)	New BMP	Bioretention	0.3	
	73rd Avenue Green Street Project (BioR No. 4)	New BMP	Bioretention	0.2	
021402050816	Barlowe Police Station Bioretention 1	New BMP	Bioretention	0.5[3]	278
	Barlowe Police Station Bioretention 2	New BMP	Bioretention	0.9[3]	
	Barlowe Police Station Porous Paving	New BMP	Porous Paving	0.9[3]	
			SUMMARY	**538.4**	**20,445**[2]

**I.A. (impervious acres treated by bmp).*
***K (cost in thousands of dollars) Cost estimates the total cost for each BMP (planning, design and construction).*
[1] *Treatment credit for stream restoration assumes100 l. f. =1.0 I.A. restored (MDE's Accounting for Stormwater Load Allocations and Impervious Acres Treated, June 2012).*
[2] *The Cost summarized for projects in design is an underestimate – as a cost estimate has not been determined for all BMPs.*
[3] *Impervious area credit not applicable due to EPA Administrative Consent Order.*

TABLE G6 2013 WATERSHED RESTORATION PROJECTS – UNDER CONSTRUCTION					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A / Acres.***	**Cost / K****
021402050822	Paint Branch Stream Restoration (Phase II)	New BMP	Stream Restoration: 1,400 LF ACOE	14.0[1]	1,200
021402010797	Leona Street	New BMP	Bioretention	0.5	186
			SUMMARY	**14.5**	**1,386**

**I.A. (impervious acres treated by bmp).*
***K (cost in thousands of dollars) Cost estimates the total cost for each BMP (planning, design and construction).*
[1] *Treatment credit for stream restoration assumes100 l. f. =1.0 I.A. restored (MDE's Accounting for Stormwater Load Allocations and Impervious Acres Treated, June 2012).*

TABLE G7 2013 WATERSHED RESTORATION PROJECTS – COMPLETE					
Watershed	**Project Name**	**Project Type**	**BMP Type**	**I. A.*/ Acres**	**Cost/ K****
021402050821	Sligo II - 319	New BMP	Bioretention, Filterra, & Step Pools	3.4	220
021402040805	Oakwood Lane	New BMP	Stormceptor	0.6	276
021402010796	Orme Drive	New BMP	Stream & Slope Stabilization: 100 LF	1.0[1]	151
021311030919	Roblee Drive	New BMP	Stream Stabilization: 213 LF	2.1[1]	385
			SUMMARY	**7.1**	**1,032**

**I.A. (impervious acres) treated by bmp.*

***K (cost in thousands of dollars) Cost estimates the total cost for each BMP (planning, design and construction).*

[1]*Treatment credit for stream restoration assumes100 l. f. =1.0 I.A. restored (MDE's Accounting for Stormwater Load Allocations and Impervious Acres Treated, June 2012).*

TABLE G8 2012 WATERSHED RESTORATION PROJECT STATUS SUMMARY			
Project Phase	**Number of BMPs**	**Impervious Area/ Acres***	**Cost/Thousands****
Dropped	3	38.2	949
Planning	2	22.8	2,378
Design	42	538.4	20,445[1]
Construction	2	14.5	1,386
Completed	4	7.1	1,032
TOTAL	**53**	**621**	**26,190**[1]

**Impervious acreage treatment credit.*

***Cost includes planning, design and construction costs.*

[1]*Cost is an underestimate, as a cost estimate has not been determined for all projects.*

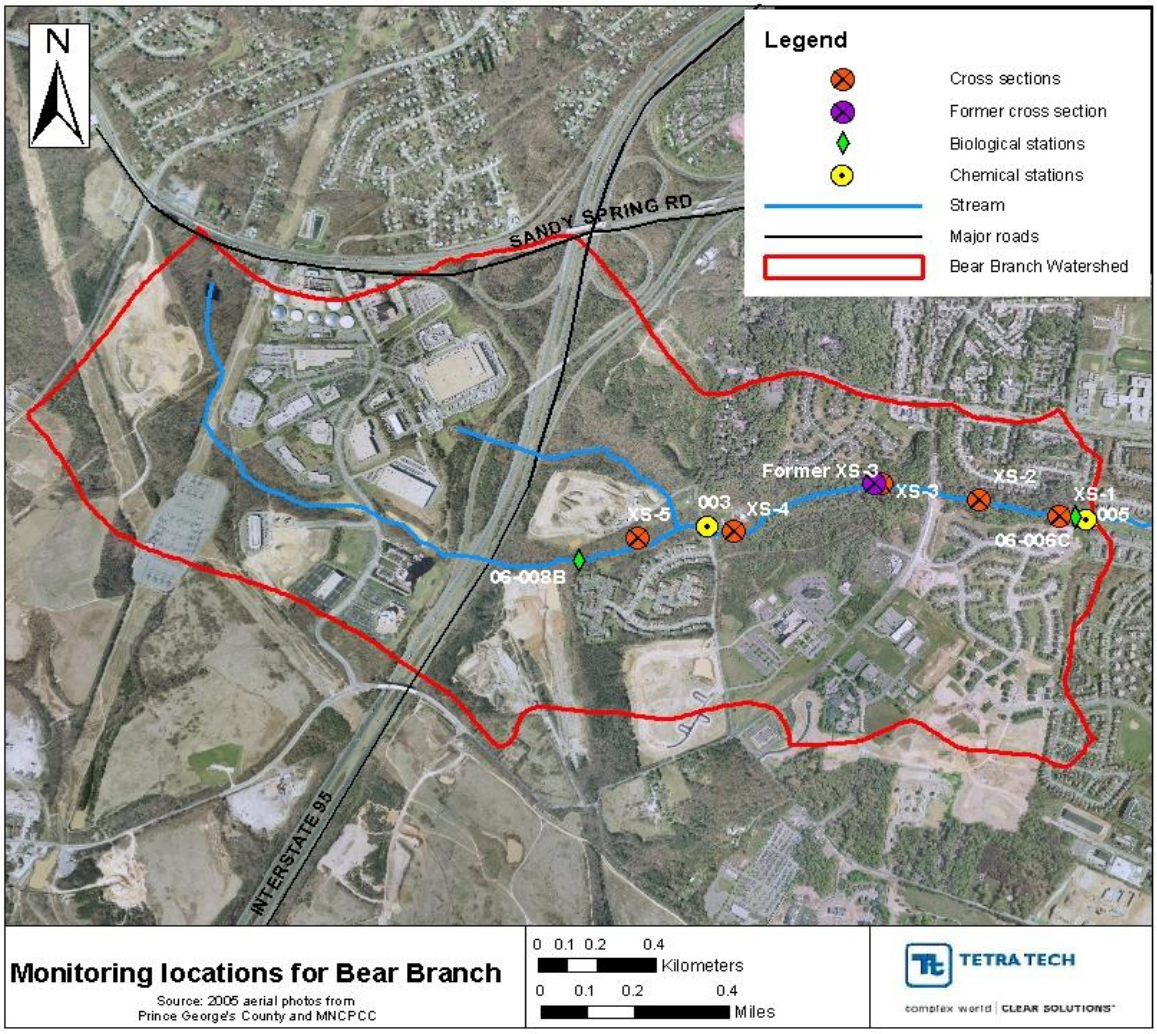
H. ASSESSMENT OF CONTROLS

1. WATERSHED RESTORATION ASSESSMENT

BEAR BRANCH

In June 2007, the County began a monitoring program in the Bear Branch watershed to assess the effectiveness of restoration projects planned for this watershed. As proposed in our correspondence dated April 2, 2007, the County relocated the two monitoring stations from the Beaverdam Creek watershed to the Bear Branch watershed, upstream of Laurel Lakes. The locations of the chemical, biological and physical monitoring stations are shown in Figure H1. A full analysis of the monitoring protocol and results are provided in the Bear Branch monitoring report, *Prince George's County, Maryland—Long-Term Stormwater Monitoring Program — Bear Branch Annual Report 2013,* included on DVD, Assessment of Controls/Bear Branch.

FIGURE H1
BEAR BRANCH MONITORING LOCATIONS



CHEMICAL MONITORING

Two automated monitoring stations were installed in Bear Branch to collect water quality and flow data. Physical and chemical monitoring started in June 2007, at stations 003 and 005 (Table H1). The data will be used to establish the baseline condition for the water quality parameters required under the County's NPDES MS4 Permit.

TABLE H1
AUTOMATED SAMPLER LOCATION AND DRAINAGE AREA – BEAR BRANCH SUBWATERSHED

Station	Station Type	Location	Drainage Area (acres)	Latitude	Longitude
003	In-stream	East of Contee Road	695	39.09023	-76.88478
005	In-stream	200 ft upstream of the forebay	1,089	39.09044	-76.86980

During this monitoring year (October 2012 - September 2013), 135 samples were collected and analyzed to represent both wet- and dry-weather conditions. For chemical data, several wet-weather observations are above the water quality criteria for the total copper (Cu), total lead (Pb), total zinc (Zn), total Kjeldahl nitrogen (TKN), nitrate+nitrite (NO_3+NO_2), total phosphorus (TP), and *Escherichia coli* (*E. coli*). Several dry-weather observations were also above the water quality criteria for Cu, Pb, TKN, NO_3+NO_2, TP, and *E. coli*. Table H2 identifies the EPA and MDE water quality criteria for the parameters analyzed in the study.

Two trend approaches were used to evaluate pollutants loading during the sampling period (2007–2013), a linear regression method and simple Mann-Kendall non-parametric trend statistical analysis. While 7 years of data are insufficient to fully evaluate and understand the processes occurring in this watershed, some preliminary conclusions can be made. The statistical analysis of data indicates a significant increasing trend for TP at both stations 003 and 005. BOD at station 005 exhibits a decreasing trend in the statistical analysis, but not regression.

The paired analysis of water quality at station 003 and station 005 suggest a significant difference in stormflow total suspended solids (TSS) event mean concentration (EMC) values between the two sites, with a higher concentration at station 005. However, it is important to note that stormflow TSS EMCs have been highly variable since sampling began in 2007. Significant differences in TSS values were observed during several storm events that occurred between 2010 and 2013. This time period coincided with the construction of the stream restoration project located between station 003 and station 005. As a result the sediment source could be land disturbance associated with construction. Continuing the paired analysis of TSS will be critical in determining whether the sediment is due to the eroding stream channel and whether the stream restoration project will reduce sediment load. No significant differences were noted for TKN or NO_3+NO_2 between the two monitoring stations in either stormflow or baseflow.

Please refer to the Bear Branch monitoring report, Section 4 beginning on page 18, for a detailed summary of the chemical monitoring results, including the EMC calculated from the sampling data and the estimated pollutant loadings to the Bear Branch watershed. Table H3 shows a pollutant load comparison for the past 7 monitoring years. A final monitoring report and the chemical monitoring database for the 2012-2013 monitoring year is included on DVD, Assessment of Controls/Bear Branch.

TABLE H2 EPA AND MDE CRITERIA FOR WATER QUALITY			
Parameter			**Source**
Freshwater	**Chronic**	**Acute**	
Copper[c] (µg/L)	3.8-26.5	5.2-44.3	National Recommended Water Quality Criteria (USEPA 2009b)[b]
	9.1-18.4	13.1-26.5	Maryland Numerical Criteria for Toxic Substances in Surface Waters (Maryland 2013a)
Lead[c] (µg/L)	0.84-15.1	21.5-387.7	National Recommended Water Quality Criteria (USEPA 2009b)
	2.7-3.3	71-85.2	Maryland Numerical Criteria for Toxic Substances in Surface Waters (Maryland 2013a)
Zinc[c] (µg/L)	49-338	49-338	National Recommended Water Quality Criteria (USEPA 2009b)
	122-270	122-270	Maryland Numerical Criteria for Toxic Substances in Surface Waters (Maryland 2013a)
Human Health for the Consumption of	**Water + Organism**	**Organism Only**	
NO_3/NO_2 (mg/L)	10	'--	National Recommended Water Quality Criteria (USEPA 2009b)
Phenol (mg/L)	10	860	National Recommended Water Quality Criteria (USEPA 2009b) Maryland Numerical Criteria for Toxic Substances in Surface Waters (Maryland 2013a)
Other			
E. Coli (MPN/100 mL)	576		Quality Criteria for Water (USEPA 1986) Maryland Water Quality Criteria Specific to Designated Uses (Maryland 2013b)
NO_3/NO_2 (mg/L)	0.125		Ecoregion-Specific Recommended Nutrient Criteria, Region IX (USEPA 2000)
TKN (mg/L)	0.3		Ecoregion-Specific Recommended Nutrient Criteria, Region IX (USEPA 2000)
TP (µg/L)	36.56		Ecoregion-Specific Recommended Nutrient Criteria, Region IX (USEPA 2000, 2011)

Notes:

[a] Water quality standards for copper, lead, and zinc can vary by the hardness (EPA) and TSS (MDE) for each sample; therefore, a range is given (USEPA 2009b and Maryland 2013a).

[b] EPA has moved to a biotic ligand model that uses temperature, pH, dissolved organic carbon, calcium, magnesium, sodium, potassium, sulfate, chloride, and alkalinity to determine the freshwater copper criteria (USEPA 2007). However, the equations for using just hardness were given, and thus used in this report.

[c] This value is for Infrequent Full-Body Contact Recreation. The steady-state geometric mean indicator criterion is 126 MPN/100 mL, and per USEPA (1986), the geometric mean criteria should be compared to no less than five samples equally spaced in a 30-day period. Criteria are also available for other degrees of body contact; however, given the depth and setting of the monitoring locations, it was determined that the infrequent criteria would apply.

TABLE H3
COMPARISON OF LOADS (LBS/ACRE) PER MONITORING YEAR

Parameter	Year	Cu	Pb	Zn	TP	NO_3/NO_2	TKN	BOD_5	TSS
Station 003									
Annual stormflow[a b] Load	2007–2008	0.032	0.0118	0.189	3.288	0.94	1.97	8	174.3
	2008–2009	0.0282[c]	0.0230[c]	0.114[c]	0.321[c]	na[d]	4.71[c e]	20.1[c]	248.5[c]
	2009–2010	0.0108	0.0336[f]	0.08	0.187	0.88[g]	3.89	22.4	265.8
	2010–2011	0.0057	0.0046	0.0334	0.074	0.243	1.6	33.6	128.3
	2011–2012	0.0121[h]	0.0075[h]	0.072[h]	0.155[h]	0.89[h]	2.55[h]	12.5[h]	210.6[h]
	2012–2013	0.0072	0.0046	0.042	0.090	0.29	0.96	9.1	101.8
Annual baseflow[a b] Load	2007–2008	0.0169	0.0043	0.045	0.471	2.19	1.25	4.7	12.6
	2008–2009	0.0044	0.0117	0.051	0.028	na[d]	5.36[e]	16.1	18.9
	2009–2010	0.0049	0.0055[f]	0.05	0.024	1.94	2.6	7.4	11.3
	2010–2011	0.003	0.002	0.017	0.01	0.931	0.8	8.8	5.7
	2011–2012	0.0040[h]	0.0032[h]	0.046[h]	0.032[h]	2.62[h]	1.31[h]	10.3[h]	10.7[h]
	2012–2013	0.0012	0.0012	0.014	0.012	1.08	0.38	4.4	11.0
Annual[a b] Load	2007–2008	0.0489	0.0161	0.233	3.758	3.13	3.22	12.8	186.9
	2008–2009	0.0326[c]	0.0347[c]	0.165[c]	0.349[c]	na[d]	10.06[c e]	36.15[c]	267.3[c]
	2009–2010	0.0157	0.0391[f]	0.13	0.211	2.81[g]	6.49	29.8	277.1
	2010–2011	0.0083	0.0067	0.0502	0.084	1.17	2.4	42.4	134
	2011–2012	0.0162[h]	0.0107[h]	0.118[h]	0.187[h]	3.51[h]	3.86[h]	22.8[h]	221.3[h]
	2012–2013	0.0085	0.0058	0.056	0.102	1.37	1.33	13.5	112.8
Station 005									
Annual stormflow[a b] Load	2007–2008	0.0145	0.0063	0.04	0.163	0.3	0.83	3.6	175.1
	2008–2009	0.0261[c]	0.0368[c]	0.140[c]	0.320[c]	na[d]	8.41[c e]	30.8[c]	613.7[c]
	2009–2010	0.0339	0.0977[f]	0.161	0.613	1.98[g]	9.63	61.4	984.3
	2010–2011	0.0318	0.0244	0.114	0.53	1.03	3.97	41.9	1,458
	2011–2012	0.0163	0.0103	0.068	0.202	0.57	3.18	15.5	349.6
	2012–2013	0.0268	0.0097	0.126	0.341	1.48	3.26	37.2	419.5
Annual baseflow[a b] Load	2007–2008	0.0047	0.0012	0.009	0.137	0.58	0.36	1.4	2.2
	2008–2009	0.0028	0.0108	0.032	0.019	na[d]	2.59[e]	10.7	23.9
	2009–2010	0.0091	0.0063[f]	0.077	0.064	2.48	3.55	8.5	11.9
	2010–2011	0.003	0.0019	0.013	0.015	1.988	0.84	24.4	18.6
	2011–2012	0.0025	0.0016	0.015	0.016	1.26	0.72	4.6	4.0
	2012–2013	0.0038	0.0031	0.024	0.069	2.47	0.96	8.6	9.5
Annual[a b] Load	2007–2008	0.0192	0.0076	0.048	0.3	0.87	1.2	4.9	177.3
	2008–2009	0.0289[c]	0.0475[c]	0.172[c]	0.340[c]	na[d]	11.00[c e]	41.53[c]	637.6[c]
	2009–2010	0.043	0.104[f]	0.238	0.676	4.46[g]	13.18	69.9	996.3
	2010–2011	0.0348	0.0263	0.127	0.55	3.01	4.82	66.27	1,476
	2011–2012	0.0188	0.0119	0.083	0.219	1.83	3.90	20.1	353.6
	2012–2013	0.0306	0.0128	0.150	0.410	3.95	4.22	45.9	429.0

Notes:

[a] Loadings were calculated from estimated stream levels for certain periods throughout the year. See Section 3.1.6 for details.

[b] While the seasonal median EMC is usually calculated for three stormflow events and one quarterly baseflow event, there are occasions that differ. See Section 3.1.6 for more details.

[c] Value is a combination of 2007–2008 and 2008–2009 values. See the 2008–2009 annual report (Tetra Tech 2010).

[d] Measured values are not presented because of high proportion of NDs and QC issues noted in Section 3.4 of the 2008–2009 annual report (Tetra Tech 2010).

[e] TKN concentrations were unexpectedly high and cannot be explained without additional investigation. See the 2008–2009 annual report (Tetra Tech 2010).

[f] High number of NDs because the RDL was above historic concentrations. See the 2011–2012 annual report (Tetra Tech 2012).

[g] NDs because of analytical interferences. See the 2011–2012 annual report (Tetra Tech 2012).

[h] Does not include loads from 06/20/12–09/20/12 because beaver dams were present. See the 2011–2012 annual report (Tetra Tech 2012).

PHYSICAL MONITORING

This is the seventh year that the County performed a geomorphologic assessment in the Bear Branch watershed. A total of 5 monumented cross sections were installed in the Bear Branch watershed assessment area. Four cross sections (XS-1 through XS-4) are located between station 003 and station 005, with cross section XS-5 located upstream of the chemical monitoring stations. The cross sections are monumented with 0.5-inch rebar topped with orange survey caps. The ends of each cross section are also flagged. In 2009, XS-3 was relocated to a section that was more susceptible to lateral bank erosion to enhance the lateral bank erosion assessment. As a result of a stream restoration project, which reconfigured the Bear Branch channel in 2011, XS-3 was physically eliminated and the rebar monuments were removed. To reestablish XS-3, the monuments were reset to the pre-construction locations. All cross sections are tied into the longitudinal profile.

A longitudinal profile was measured from just downstream of station 005 to approximately 6,312 feet of stream in 2007. A benchmark was established in 2007 and used as a common reference datum to relate elevation data collected previously to this year's measurements. Throughout the profile, the elevations and locations of the thalweg were surveyed using a total station data collector. The same longitudinal profile in 2013 includes 6,630 feet of stream. The length difference can be attributed to changes in the thalweg of the stream, varying locations of the upstream project limit, and resolution of the profile survey. The stream slope of the mainstem assessment area taken form the stream bottom in 2013 is 0.0082 ft/ft or 0.82 %, which is slightly lower that the slope in 2012 (0.84 percent). The slope difference between 2013 and 2012 can be attributed to the apparent change in length of the surveyed thalweg and does not represent any significant change in slope.

The channel contains several headcuts, but they are temporarily being constrained from moving upstream by grade controls. The grade controls range from riprap protection over utility crossings to culverts and tree roots. In addition to the headcuts reported in previous years, two new headcuts were identified within the restored reach (station named HCBB-4 and HCBB-5). All headcuts were flagged and located with absolute coordinates in addition to thalweg station locations, to determine whether any of the headcuts are progressing. Because incision has been the dominant adjustment process, it is important to know where incision is occurring by monitoring the location of these headcuts. Instability is also present in the two sections of channel that are braided. It is expected that these braided reaches will continue to adjust, remaining unstable until a defined channel is reestablished.

A nonparametric statistical test was performed to screen the geomorphic data for any possible trends before performing a regression analysis. The Mann-Kendall statistic (*S*) was calculated for geomorphic parameters of entrenchment ratio and channel area. The Mann-Kendall statistic was calculated for each cross section. Cross sections were evaluated using 7 years of monitoring data starting in 2007. Note, the trend in entrenchment ratio for cross section XS-3 could not be determined because it was relocated in 2009, and then altered again during the construction of the stream restoration project in 2011.

Since 2007, several cross sections exhibit trends for entrenchment ratio and channel area. The downstream cross section (XS-1) shows increasing channel area, which indicates erosion. Entrenchment ratios for upstream and downstream cross sections (XS-5, XS-4, and XS-1) also show increasing trends. In Bear Branch, both channel area and entrenchment ratio exhibit increasing trends at XS-1, suggesting that the cross sections are widening but not incising. This is contrary to the analysis of the longitudinal profile which indicates that the dominant erosional process within the reach is incision. Incision is most likely the dominant erosional process, as shown in the profile, but bank erosion is still occurring, as shown in the cross section analysis. When compared to changes in impervious area, the downstream cross section, XS-1, showed a strong relationship between channel areas and entrenchment ratio to increased impervious area (R^2 = 0.67 and 0.65, respectively). Entrenchment ratios in the upstream cross sections XS-4 and XS-5 also show an increase with increasing impervious area (R^2 = 0.78 and 0.85, respectively); however this relationship is questionable since impervious area upstream of station 003 has changed only slightly between 2007 and 2012, and has only recently experienced a large change due to construction along I-95.

BIOLOGICAL MONITORING

Biological and physical habitat assessments were performed to determine the physical habitat score and B-IBI in the spring of 2007. In 2008, additional biological monitoring was conducted at 06-006C and at a new station, 06-008B. Both stations were evaluated again in subsequent years (2009 to 2013). The methodology followed the *Biological Monitoring and Assessment Program Plan* (DER, 2000). Sampling for benthic macroinvertebrates and physical habitat occurs in the spring (late March or early April) of each year. The B-IBI scores for each of the assessment years are presented in Figure H2 with the physical scores presented in Figure H3.

Trends in the biological parameters were observed in the upstream site, station 06-008B, but not in the downstream site, station 06-006C. Station 06-008B shows a decrease in B-IBI score compared to previous years (no trend) and a decreasing trend in physical habitat score. The 2013 decreased B-IBI score (after years of increases) suggest that continued monitoring is necessary to better understand the processes occurring in the watershed and to determine if this is a new trend or a single event. Although increased B-IBI scores typically indicate improved biological conditions, an alternative explanation is that nutrient enrichment, including phosphorous and nitrogen, is causing an increase in algae and fish populations without improvement in habitat quality.

Station 06-006C

Physical habitat quality has varied each year. The physical habitat for station 06-006C is rated as *Partially Supporting* (score 103) which is the same rating as 2012 (score 104). Channel alteration and channel flow status rated as *Sub-Optimal*. Channel sinuosity, pool substrate characterization, pool variability, and vegetative protection (left and right bank) rated as *Marginal*. Bank stability (left and right bank) and sediment deposition rated as *poor*.

Assessments for Station 06-006C showed no consistent trend in biological condition over the 7 year monitoring period. The 2013 B-IBI score resulted in a site condition rating of *Poor*. In 2009, biological condition was rated as *Fair*, only slightly higher than in other years, which rated as *Poor*, but again, those are not statistically significant differences (within 90% confidence interval), and no trends are apparent.

Midges (Chironomidae) dominate the sample. The midge taxa present in large numbers in this sample are considered facultative, neither especially pollution sensitive nor pollution tolerant. The one change in this site was the appearance of a single mayfly (Ephemeroptera) taxon. Mayflies are typically indicative of good water quality.

FIGURE H2
B-IBI SCORES FOR BEAR BRANCH BIOMONITORING LOCATIONS: (LEFT = 06-006C, RIGHT = 06-008B)

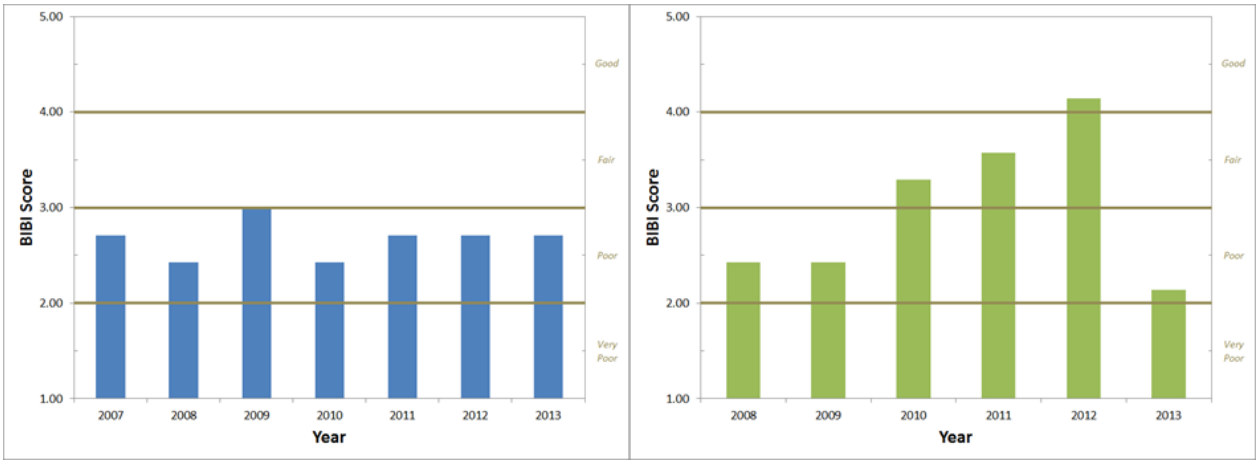
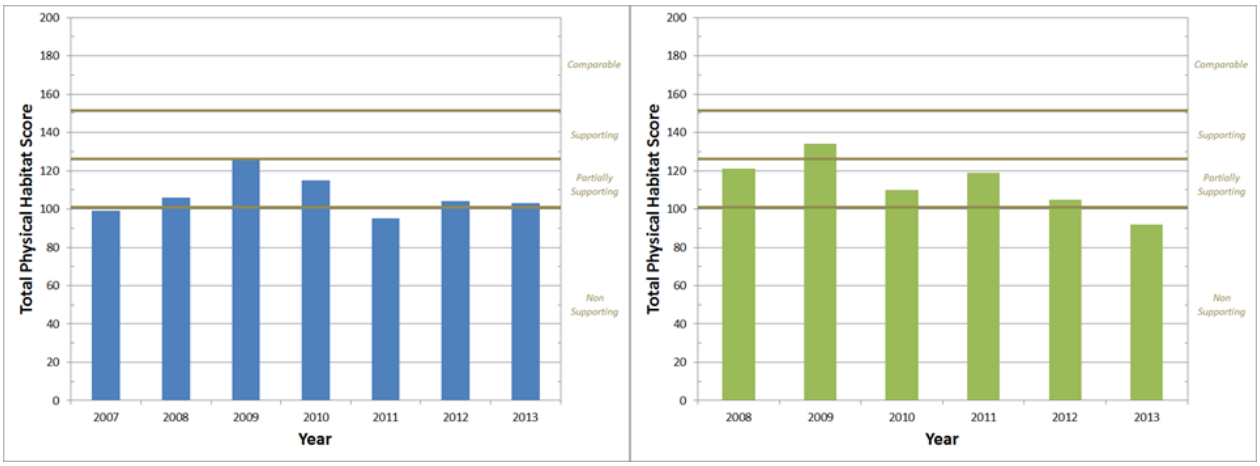


FIGURE H3
TOTAL PHYSICAL HABITAT SCORES FOR BEAR BRANCH BIOMONITORING LOCATIONS: (LEFT = 06-006C, RIGHT = 06-008B)



Station 06-008B

The physical habitat rating for Station 06-008B is *Non-Supporting* with a total score of 92. The B-IBI score at this site results in an overall condition rating of *Poor*. The station is farther upstream than station 06-006C and has a more natural channel. Bank instability is the most prevalent problem at this station. There was a trend of improvement in biological condition at the upstream location in the three previous annual assessments (2010–2012), but the most recent sample (2013) returned to lower assessment scores from 2008 and 2009. Although some apparently significant differences exist in physical habitat quality from year to year, there is no consistent trend.

Looking at water quality at station 005, which is near biological station 06-006C, water chemistry results exceeded recommended criteria in several instances throughout the year, mainly during storm events. During stormflow, Cu exceeded the acute criterion for 19% of the samples.[1] During stormflow, EPA chronic criteria were exceeded for Cu (33% of the samples) and Pb (44% of the samples), and zinc (4% of the samples). In addition TP, TKN, and NO_3/NO_2 were above nutrient recommended guidelines 75% of the time. Occurrences of those chemicals in the observed concentrations could be part of the stressor load (in combination with degraded physical habitat) causing degradation of biological condition. Further, it appears that the most likely sources of the chemicals are human activities in the urban land cover in the drainage area. Table H2 identifies the EPA and MDE water quality criteria for the parameters analyzed in the study.

2. STORMWATER MANAGEMENT ASSESSMENT

BLACK BRANCH

Prince George's County began monitoring the Black Branch watershed (BBW) and a small tributary of the BBW (Tributary 1) in 2001, using physical, hydrologic, and hydraulic methods to assess the effectiveness of LID technology on stream stability and meet the SWM assessment component of our NPDES MS4 Permit. The County discontinued the chemical monitoring program along Tributary 1 in March 2008. Biological monitoring, just below the confluence of Tributary 1 and Black Branch, was discontinued after 2007.

The specific requirements of the monitoring program, as outlined in the permit, are as follows:

- An annual stream profile and survey of permanently monumented cross sections in the Black Branch to evaluate channel stability in conjunction with the ensuing residential development of Oak Creek Club.
- A comparison of the annual stream profile and survey of the permanently monumented cross sections with baseline conditions for assessing areas of aggradation and degradation.
- A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-2, HEC-RAS, HSPF, SWMM) to analyze the effects of rainfall, discharge rates, stage, and if necessary, continuous flow on channel geometry.

The geomorphic stability of Black Branch and Tributary I is evaluated using a variety of direct physical measurements conducted annually. To monitor and compare changes in channel geometry, 14 permanently monumented cross sections (named MS1 through MS9 along the Black Branch and T1 through T5 along the Tributary 1) are surveyed. The entire Black Branch mainstem was surveyed from its confluence with Collington Branch for approximately 2.2 miles upstream to slightly beyond the uppermost cross sections. The overall channel slope of the Black Branch mainstem is 0.31 % and has not changed over the past year. The predominant channel type of the cross sections in the mainstem is type G (four cross sections). It should be noted that cross-section MS1 has been scoured so much that it cannot be used for the classification.

1 Toxicity of copper, lead, and zinc can vary by hardness or pH (Maryland 2012a). For the 2011–2012 sampling season, hardness was not analyzed; therefore, no hardness information is available.

The mainstem appears to be in transition: some sites show aggradation one year and degradation the next, while other sites show degradation one year and aggradation the next. The main process of adjustment in the mainstem of Black Branch is incision leading to vertical instability. Bank erosion will follow as the banks are over steepened and fail. The over steepened banks are unstable because of the high bank angle. Although the failure mechanism is complex, it typically involves undermining of the toe of the steepened bank and subsequent failure. This failure will continue over time until the angle of the bank is reduced to a stable angle of repose. There may be a shift to lateral erosion in the future as the channel continues to adjust, but the current process is limited to incision and failure of over steepened banks. The presences of new nick-points and changes in existing headcuts is another symptom of vertical instability. The presence of several new nick points indicate that the vertical instability in Black Branch is widespread. The nick points create a condition of excess sediment deposition downstream of the moving nick point thus causing aggradation to occur even while the nick point is lowering the channel as it moves upstream. Thus, the channel is both aggrading and incising at different points at any given time, since each nick point causes downstream aggradation as it moves heardward. In 2013 the mainstem sections show little or no change in full-channel, cross-sectional area, with the exception of MS6. A large tree was undermined and fell into the channel at MS6. This caused additional erosion to occur around the tree.

Tributary 1 was surveyed from its confluence with Black Branch for approximately 2,200 feet upstream to slightly beyond the uppermost cross section. The channel slop of Tributary 1 in 2013 is 0.0051 (0.51 %) and has decreased slightly in the past year. Small differences in the calculated slope from year to year are likely a result of the inability to reproduce the exact thalweg length in surveys and are insignificant. In 2013, Tributary 1 stream types have shown little change in comparison to 2012. Although the stream types have not changed, this does not necessarily indicate that the tributary is stable. There is a heavy load of fine sediment continuing to move through the stream system. This sediment may get trapped by woody debris, causing dams and obstructions which can in turn propagate significant channel adjustment while they are in place. Like the mainstem, the primary process of adjustment in Tributary 1 is incision. Two sources of sediment result from this incision. The initial source is the lowering of the bed which generates sediment loss. After the incision has occurred the banks are over steepened. These over steepened banks subsequently fail, generating enormous quantities of sediment.

Tributary 1 is likely still adjusting to the land use alterations resulting from agricultural activities, as well as the more recent development activities at the Oak Creek Club golf course, although this process might be slowing and this reach might be stabilizing. The source of the aggradation is primarily the sediment generated from the process of head-cutting, which is still occurring. As the channel incision points (nick-points) move upstream the channel is lowered and excess sediment is generated and carried downstream causing aggradation in lower portions of the reach. Whether the channel is aggrading or degrading depends upon the location and recent progress of the headcut.

Since a land use analysis has only been performed for the Tributary 1 watershed, a regression analysis was only performed on cross sections in Tributary 1. Geomorphic parameters were compared to residential area to determine if any correlations exist between land use change and channel stability. Some cross sections, such as T3, continue to display high correlations between residential area and entrenchment ratio but overall there was an inconsistent correlation

between entrenchment ratio and residential area in Tributary 1. The correlation was even weaker between channel area and residential area.

For several key geomorphic parameters, long term trends have been identified in the Black Branch mainstem and Tributary 1. More data are still needed to determine if these changes can be correlated to land use changes within the watershed, but results from 2013 indicate the reach might be beginning to stabilize. It is currently not possible to separate the effectiveness of the BMPs from the rest of the watershed modifications. Long term trends and physical assessment of Tributary 1 indicate that overall stream health is fairly constant from last year and the reach might be starting to stabilize in response to earlier residential development within the watershed.

The County will continue to monitor the physical conditions and the land development in the Tributary 1 watershed to enhance understanding of the effects of the Oak Creek Club development. *The Effects of Low Impact Development on the Physical and Chemical Characteristics of Black Branch, Annual Report 2013*, provides an in-depth analysis of the methodology, physical monitoring data, and results of this year's monitoring. The report and an electronic copy of the Black Branch HEC-2 analysis is provided on DVD, Assessment of Controls\Black Branch.

I. PROGRAM FUNDING

With enactment of State legislation in spring 1987, the Prince George's County SWM District (a special taxing district) was formed on July 1, 1987. The mission of the County's SWM Program is to minimize flooding, maintain water quality, and protect natural resources by controlling, regulating, and managing stormwater runoff associated with urban development and land use activities.

The services, responsibilities, and functions provided by Prince George's County's SWM Program include the following:

- Administering the County's SWM Ordinance, including reviewing and approving SWM concepts and design plans, studying floodplain limits, and granting waivers to the Ordinance.
- Performing detailed assessments of existing water quality with the assistance of private consultants.
- Securing grant funding to further the goals and objectives of our watershed restoration program.
- Preparing design plans and overseeing the construction of regional SWM facilities and water quality control projects.
- Performing water quality investigations in support of eliminating illegal connections to the County's storm drain system.
- Assisting our 22 Phase II municipalities with general Permit compliance.
- Performing floodplain studies and regulating the uses within the delineated floodplain areas.
- Preparing State-mandated monitoring reports on the County's SWM program activities.
- Inspecting construction of private SWM systems (primarily water quality basins and infiltration devices) outside of public rights-of-way.
- Periodically reinspecting private SWM systems outside of public rights-of-way.
- Enforcing applicable regulations for the maintenance of private SWM systems outside of public rights-of-way.
- Maintaining and operating publicly owned SWM systems and flood control facilities.

The operating budgets, including all maintenance activities, of the County's SWM program for FY 2004 through FY 2011 are summarized on DVD, Program Funding.